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PREFACE

"Psychology in Education," the first book in a series of which this is the second, was intended as a foundation whereon to build a pedagogy.

"Method in Education" attempts to develop in detail the applications of psychology in the work of teaching.

RURIC N. ROARK.

LEXINGTON, KENTUCKY.

METHOD IN EDUCATION

An Institute Manual
and
A Text-book for Teachers

BY

RURIC N. ROARK, PH.D.

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OF KENTUCKY
AUTHOR OF "PSYCHOLOGY IN EDUCATION"

NEW YORK ·:· CINCINNATI ·:· CHICAGO
AMERICAN BOOK COMPANY

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CHAPTER I

INTRODUCTION

What to teach. — The subject-matter of education must be determined largely by what the educated man and woman should be and do, as they modify, and are rightly modified by, their individual, national, and race environment. Formal education (the education of the schools) is to make not only men and women of cultivated intelligence and sound character, but men and women who shall be equipped in both physical health and moral strength to sustain that character against the stress and strain of active life, and to apply their intelligence to the practical bread and butter affairs, as well as to the spiritual things, of a complex civilization. The debate is still on between those who insist upon a utilitarian education and those who plead for the liberal or cultural education. Here, as everywhere, the middle way is safest, and there should be no debate as to whether all classes should have somewhat of culture as a result of education, nor as to whether any class could long survive to enjoy its culture if it did not get something in its schooling whereby to make a living.

Not determined by sociology alone. — But what should be put into courses of study cannot be determined solely upon the sociological basis; counsel must be taken also of the *inner nature* of the one taught. Since the mind and body are the instruments with which the man or woman is to make or mar life, what will best and most quickly fit them to do their work aright must find place in any adequate scheme of education. The *content* of education, then, while indicated mainly by sociology, is also partly indicated by psychology and the laws of physical growth.

How to teach. — On the other hand, the question as to *form* of education — the *how* to teach — must be answered in the main by a practical psychology, and only slightly and incidentally by sociology. If, as Laurie says, "teaching is simply helping the mind to perform its function of knowing and growing," then only a careful, persistent, and sympathetic study of the growing mind can show the teacher by what processes it acquires knowledge, assimilates it, and expresses the results (concepts and conclusions); and under what stimuli these processes are best and most fruitfully set going.

Depends somewhat on the matter. — The formulation of right method is also dependent upon the *matter* of education. There is a *how* to be discovered in the different subjects taught, as well as in the mind to be trained. Every legitimate subject of study is related both to the mind of the learner and to the practical requirements of liberal living; hence each subject will suggest methods based upon this double relation. Dr. Jacobi very neatly sums it up by saying that the teacher is "to produce effects upon a living organism, to modify forces which begin by being psychological and end by being sociological."

Distinction between management and method. — The consideration of what to teach, together with many other questions growing out of this one, falls within the sphere of educational Management. The question of how to teach belongs to the subject of educational Method. Although these two branches of pedagogics touch and overlap at several points, as indicated in the preceding paragraphs, yet this general distinction may be drawn between them — *Management* deals with the organization of the individual school and its courses of study, and with the correlation and administration of all educational forces; *Method* deals with the principles upon which good teaching must be based, and with the means of making each subject in the curriculum produce the best educational results. Very much depends upon the order and way in which a body of knowledge is built into the mind. The same fact produces different results at different times, and when presented in different ways. It is the province of methodology to determine the best order and the best way; its problem is how to get mind out to matter and matter into mind. Discrimination should be made between *method* and *methods*.

Method and methods. — As has been said elsewhere,[1] "By method is to be understood that body of principles drawn chiefly from a sound psychology, which are applicable to all teaching; by methods are to be understood the special plans and devices to be used in teaching a particular branch or subject." The general principles of method are obtained by induction and inference from a study of individual and race development; methods are applications of these general principles in the teaching of the several branches.

Education justifying itself as a science. — Occasionally even now one may hear it said that there is no need of a study of method in education, that if the teacher knows thoroughly the subject-matter to be taught he knows all that is necessary to equip him for safe teaching. The science of education is justifying itself so admirably, in these latter days when educational matters are on everybody's tongue and on the pages of every popular periodical, that those who deny teaching a place among the liberal professions have a heavy burden of proof to carry. The question of method has forced an asking in all the higher institutions of learning, and there is hardly a college or university in this country to-day that does not have its department of pedagogy.

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[1] Page 267, Roark's "Psychology in Education."

Adequate knowledge is only one essential. — To know well what is to be taught is, of course, one prerequisite of teaching, but it is only one of three. The other two are a knowledge of *mind* and its laws of growth, and a knowledge of *how* to make subject-matter stimulate and nourish growing mind. An attempt to teach without this knowledge of mind would be much like an attempt to practice medicine with only a knowledge of the pharmacopœia, and with none of anatomy and physiology. Some quite successful "doctoring" used to be done by good people who did not know the course of the blood's circulation, but in most states the laws now protect a too confiding public against pure empiricism in medicine. Nor is it enough for the physician to know the drugs and their general value, and the anatomy and physiology of the human body. He must know also *how* to use drugs, and how to modify the conditions of diet, sleep, and work so as to cause the *normal functioning* of every organ. The teacher must know *how* to cause growing mind to react healthily upon the subject-matter. But the revolt which was sure to come against the claim *that* full knowledge of subject-matter is the only essential, carried some enthusiastic reformers too far the other way, and so there was for a while a magnification of method — or rather *methods* — and an unfortunate minification of knowledge. Hence it came about that some over-methodized folk brought themselves, and the cause for which they tried to stand, into an easy disrepute from which it has been somewhat difficult fully to recover.

So, while it is still true that teachers with good method, without full knowledge, will sometimes accomplish as much as the thorough scholar who lacks method, — and may even accomplish more, — yet the *best* teaching is done when sound and broad scholarship is joined to sympathetic knowledge of mind processes, and to skill in making *mind hungry for the best nutriment.* In place of the former demand, therefore, that the teacher should know only the "three R's," there has grown up the more rational one that he shall know the "three M's" — Matter, Mind, Method, which include the older requirements and much more.

CHAPTER II

FOUNDATIONS OF METHOD

How does the child grow and know? — The inquiry that stands at the very threshold of the subject of Method is, "How does the child *grow* and *know?*" At the age of six, when school education usually begins, the child has proportionately a larger amount of well-assimilated knowledge, and corresponding power of physical and mental expression, than he usually gets in any later six years of his life; and the general contour of habit and character is already defined. Knowing this, the teacher's constant aim should be to find out *how the child has come thus far so quickly.*

Through the sympathetic study of normal childhood the following facts have become more or less clearly evident, and may be accepted as the basis of a system of educational method: —

I. *The healthy child is full of activity of body and mind.*

The muscles are active long before there is evidence of consciousness. When consciousness is fully awakened, then all the powers of the mind are alert and responsive to their environment, and every muscle is a-quiver with the tendency to function.

The child cannot keep still; its physical life is one of ceaseless movement, and its mental life is marked by a rapid increase of energy — a never ending inflow of sensations and outflow of impulses.

II. *The child enjoys this natural and inherent activity.*

Normal activity is pleasant. — It is a fundamental law in psychology as in biology, that *growth* is dependent on *use;* that is, every faculty, as every organ, must *function* normally in order to grow. Since this law cannot be comprehended by the child, there must be some other way to bring about *use* than through the knowledge of its necessity; hence, the inherent pleasurableness of normal activity. The child, without thinking about it at all, is active in body and mind because it is pleasant to be active, and unpleasant, even painful, to be inactive. He *enjoys* the functioning of muscles and stomach, of lungs and hands, of sight and touch, of memory and imagination, of feeling and will. His normal condition is one of happy intaking of impressions, and of expression in movement and speech.

III. *The first important act of consciousness is sensory perception.*

The physical senses are the gates through which the object-world enters to awaken and stimulate consciousness, which, until it is thus awakened, exists only as a possibility.

Consciousness first reached only through the senses. — So far as can be known, the human being born without the physical senses, would, if he could survive at all, live merely a vegetal life. In the case of the normal child, impressions begin to impinge upon his sense organs at birth. After a while — almost at once — impressions received from without flow along the proper nerve tracts to the brain and then become *sensations* in consciousness — sensations of warmth, softness, light, sound. Still later — a very little later — consciousness refers these sensations to their objective causes, and the objects are *perceived.* The specific act of objective perception is this reference of sensation to its cause, the awareness of consciousness of something external to itself. Even this act of external perception involves that inner perception which is called *intuition*, a perceptive power the importance of whose activity is altogether too much ignored by psychologists and pedagogists.

This, so far as we know, is the real awakening of the mind, and the fact that the teacher must not forget is, that it is brought about by the reaction of consciousness to the stimulus of *external objects*.

IV. *The first effect of perception is to arouse feelings, either agreeable or disagreeable; and the first conscious movements of the child are expressions, in various ways, of these feelings.*

By the time the child enters school, other mental activities have developed greatly, and in large measure modify these first impulsive and purely egoistic feelings. But they still constitute a very considerable part of the child's life, and must be treated as prominent factors in any effective scheme of method or management.

The feelings are potent stimulators of all the nascent powers, and from now on there is rapid growth in the child's life. Impressions come crowding upon one another from the outside world of things, quickening and energizing consciousness into the higher forms of perception, and the growing mind intuits *relation*, likeness and unlikeness, function, cause and effect. The child *learns* rapidly and readily, and by the time he enters school he is far on the road along which it is the business of the teacher to direct his further progress.

V. *The general operations of learning are two — acquisition and assimilation.*

Processes of acquisition. — The processes of acquisition — of getting knowledge-material — are (1) perception, (2) conception, (3) retention.

Perception, as said before, consists essentially in consciousness becoming aware of objects external to itself, as they affect it through the senses.

Conception is the process of forming general notions from the percepts of individuals, through the natural tendency of the mind to note likeness. Objects that resemble one another are classed together by even the very young child, and a name learned for one is applied to all. Thus concepts, or general notions, of the things in the child's object-world are built up in the acquisitive mind. Abstract concepts — concepts of *qualities*, as power, beauty, truthfulness — are formed in the same way — from percepts of these qualities as shown in individuals.

No real acquisition without retention. — Retention is a function of the memory. Neither percept nor concept can be said to have been really acquired unless it is *retained*. Two facts of prime importance for the teacher, in this connection, are (1) the memory is very plastic and retentive in childhood; and (2) the memory retains and recalls *associated* facts and ideas more readily than disconnected ones.

The learner, then, acquires facts — knowledge and knowledge-material — through *sense contact with things*. The mind sets to work *to understand*, to reflect upon and assimilate, these facts. Acquisition and assimilation go on together, or at least so closely does assimilation, in greater or less degree, follow acquisition that the two acts can hardly be distinguished in time after the first two or three months of the child's existence. Logically, of course, acquisition must precede assimilation; and psychologically there is more acquisition than assimilation during the first fourth of life.

Sense learning. — On the presentation of a new object, the learning child, filled with curiosity, — the *desire to know*, — looks at it, then almost immediately reaches to get it in his hands, and continues his sensory investigation until he is satisfied that he does not know what thing it is. Then he seeks from the object itself or from some one — parent, teacher, or playmate — an answer to the question, "What is it?" by which he means, "What is it for?" "What is its use?" "What things that I already know is this new thing like?" Even before he can talk, his active mind finds answers to these unformulated questions by an investigation of the object. As he grows older, he may be so unfortunate as to have these questions answered in words only, instead of being helped to closer questioning of objects themselves.

Assimilation is the special work of judgment, because to assimilate is, in its first movement, *to perceive relations*. No fact is of value out of relation to some other fact or facts; hence the need of correlation in teaching.

VI. *The process of learning is analytico-synthetic.*

An object is first apprehended, somewhat vaguely, as a whole; then its various properties — color, size, shape, density — are noted more in detail, and something is learned of the relations of its parts to one another. Thus what was first observed as a whole is gradually reduced to its *elements of impression*.

Assimilation is synthetic. — Second, the mind, by this analysis, becomes ready for the next operation, that of assimilation, and passes immediately to it, *synthesizing* the various elements, reached by analysis, into a better-apprehended whole, and seeking to assimilate the new facts further by asking the *use* of the object — its relations to other objects or to self. There is a spontaneous effort to relate the new acquisition to facts already learned, to build it into or onto the knowledge already possessed, and to strengthen this assimilation by discriminating the new object from familiar objects. This act of discrimination, of perceiving differences, is essential to clear conception.

Synthesis is carried into generalization.— Observation of the child's mental processes makes it evident that, long before he can talk, he generalizes — reaches conclusions, and acts upon them. The synthesis, of which the first step is putting the parts of an analyzed whole together, and the second is putting the whole into its *class*, goes farther, and from classified and correlated individual facts and ideas generalizes — that is, reaches a conclusion or principle which at once becomes a test for new knowledge or a guide to new actions.

These processes the same for advanced learners. — Although we rightly go back to the child to study the genesis of mental states and activities, yet, after all that is said about "child psychology," the truth remains that essential psychoses of the learner are the same, whether he be in the kindergarten or the university. The "object" of the kindergarten child may be a cylinder; the "object" of the pupil in the technological laboratory may be a new dynamo; the "object" of the university student may be a bit of old Greek philosophy. In either case, learning goes forward by the same process — *analysis, synthesis, generalization.* If it were not so, it would be difficult, if not impossible, to have any general principle of method. As it is, there is continuity and unity; and the processes of teaching, corresponding to the processes of learning, are the same in essence for all grades.

VII. *Acquisition and assimilation are accompanied and followed by expression.*

In the earliest years, expression is mainly the outlet, in various ways, of feeling; later, it becomes the outlet of thought and volition also.

Expression takes many forms, consisting at first mainly, if not altogether, of involuntary muscular movements and inarticulate cries; it passes through coördinated and voluntary muscular activities, the beginnings of speech, the first efforts at manners and conduct, on into written language, and finally into the highest forms of manual skill, literature and the arts, and the altruistic life.

Expression has three forms. — The child's activities find expression in three general ways: in physical bearing and action, in language and representative arts, — such as drawing, modeling in sand and clay, whittling, — and in conduct and behavior. These forms of expression are more or less closely interrelated, and each one may serve as an outlet for the activities that ordinarily flow through the other two. Physical expression is not only a sign and test of health, natural or attained, but is moreover a test of intellectual alertness, the state of the feelings and volition. Intellectual and emotional expression are much modified by the physical condition and the functional health of physical organs; and moral expression varies with health and the intellectual and emotional activities.

VIII. *All activity is in direct proportion to interest.*

Any force, mental as well as physical, works best along lines of least resistance. In the case of human activity, in child or adult, the lines of least resistance are marked by interests.

There is nothing in the objective world around him in which the growing child does not take an interest. Everything touches him, and he responds promptly to the stimulus.

Interests are universal. — Nor is interest any less when the mind begins to peep into the world of abstract ideas. The six-year-old wants to know the "why" and "how" of everything; he is a theologian, alternately reverent and skeptical, asking questions that are as old as man; he is a psychologist, searching into the causes of the feelings and beliefs of those about him; he is a sociologist, wanting to know the sources and limitations of authority in those set over him. He has the same kind of interests that have caused the formulation of all the sciences and all the philosophies.

Interests are evanescent. — But although the child's interests are intense, they are apt to be evanescent and shifting, — too easily satisfied or too easily discouraged. As he grows older, some interests, on account of environment or natural aptitudes, become atrophied, and the teacher finds them in that condition when the child first comes to him. One problem the teacher has constantly set for his solution is how to revivify these interests, and how to direct and satisfy those that are actively alive.

IX. *The activities of childhood are largely imitative.* The early conscious and semiconscious expressions of the child take the directions indicated by the activities of those with whom he is in daily association. He learns his speech, his manners, his modes of thought, by imitating the older children and the adults around him. At the same time, what he does soon comes to be marked by individual traits peculiar to himself. There is original variation in his language, manners, and ways of thinking and doing. In most cases these are only variations, however, and throughout his life he retains the impress made by imitation of what he saw and heard in early childhood.

X. *The tendency of any organ or faculty is to form habits by repetition.*

There is an inherent tendency to repeat, unconsciously or sub-consciously, movements that at first are merely reflex. After a little, the muscle that has contracted in a certain way several times, finds it easier to contract in that way than in any other; and so, in accordance with the law of least resistance, muscular habits are formed.

As the child grows, certain modes of observing, of thinking, of doing, are repeated more than others, — on account, perhaps, of some hereditary tendency or peculiarity of environment, — and habits of thought and conduct are formed.

Repetition results in habits, and upon habits depend physical dexterity, quickness and accuracy of thought, and the worth and permanency of moral character.

So much having been discovered (it has been known for a long time), the teacher's problem may be stated thus: How shall this growing self-activity be kept pleasantly and profitably engaged; how shall it be energized and *directed* so that it may busy itself to find what things in life are worth while, and may concern itself with these and with no others; and how best shall there be imitated or continued, in the formal education of the school, the natural processes by which the child of six obtained its sum of knowledge and skill, and projected its lines of habit and character?

CHAPTER III

GENERAL PRINCIPLES OF METHOD

FROM the foregoing salient facts of growth a few principles of education may be deduced, if only in a tentative way and as forming a plan by which something better may be worked to.

I. *The processes of teaching should conform to the order and laws of individual growth.*

In this principle the whole of method is summed up.

The principles and laws of a science can be formulated only after patient study of the facts with which the science is concerned; and it must be assumed that the facts are true and rest upon fixed laws. So education as a science must be formulated upon phenomena and their causes and relations.

The science of education rests upon natural phenomena. — The earliest lesson the educator must learn is that the mind exhibits phenomena as uniform, governed by laws as fixed as any others in nature. Scarcely a beginning has been made of observing these phenomena and formulating their laws; and teaching has gone too much on the idea that the phenomena and the laws are both wrong and must be changed.

But most educationists now are convinced that the mind is a normal *growth*, and that the work of teaching must, to be effective, move along lines indicated by the mind's own natural development.

School curricula and mental operations. — Consequently, school curricula should be so planned that during childhood and early youth the emphasis shall be put upon acquisitional studies and exercises; in the middle years of school life, upon assimilational work; and in the last two years of college and in the university, upon expression through some form of specialized skill. But in each period and in each study or exercise, of course, attention will be paid to all three operations of the mind.

II. *All the powers of the body and all the faculties of the mind must be developed, and trained to proper functioning.*

This is only a little closer statement of the first principle; for if we develop and train according to the order and laws of growth, we must omit no physical or mental faculty, as each has its own order and law of activity; and to fall short of the education called for by these is to fall short of the well-rounded fullness of manhood and womanhood.

APPLICATIONS TO PHYSICAL EDUCATION

A school without necessary appliances for physical education will some day be looked upon as one is now which has no apparatus for aiding in intellectual education. It is a trite saying that the mind must have a sound body to be sound in. The old idea of the scholar's brow being sicklied o'er with the pale cast of thought has no place in modern conceptions of the mutual relations of body and mind.

A sound physical basis is necessary. — To meet the heavy demands of life as it must be lived to-day there should be a strong and resilient physical basis,—well-toned muscles, thorough digestion and assimilation, capacious lungs, all contributing to the efficiency of a healthy brain. These are commonplaces of educational theory, but the theory has hardly begun to be put into practice. In only a few of the largest cities is there medical inspection of pupils, and such inspection does not, as yet, often go beyond the determination of the affections of the eye and ear, and the detection of contagious diseases.

In every university and college, and in every system of schools in the large cities, there should be — will be, some early day — provisions made for the regular testing, not only of the eyes and ears, but of digestion, heart, lungs, and muscles. Such testing will be preliminary to the prescription of courses in physical training and in hygienic living, just as an entrance test in intellectual attainments and power is preliminary to the assignment of a pupil to a suitable grade or group in which he may do profitable mental work.

Courses in physical training and hygiene. —Before this idea of adequate physical education can be effectively carried out, some matters of educational management must be settled. No difficulty — except indifference and conservatism — seems to stand in the way in the case of the well-to-do higher institutions, public and private. But in the country, where the greatest numbers are taught, and where, therefore, the teaching should be as good as the best, there are grave difficulties in the way of adequate inspection of the physical conditions of the pupils, and of affording them professionally directed development and training.

Perhaps that which will do most to remove these difficulties is the spread of the plan now in use in parts of a few states, of centralizing educational appliances and forces, and conveying pupils to a well-equipped, well-officered central school. Meanwhile the conscientious country teacher can do much to improve the physical condition and direct the physical training of his pupils.

Physical education in country schools. — Every teacher should have some practical knowledge of physiology and hygiene, and thus be able to detect abnormal conditions in his pupils, and to do much toward correcting such conditions by plain, specific lessons on bathing, eating, sleeping, and exercising. And there should be the same intelligent and sympathetic supervision and direction of the play activities of the pupils as of their studies. The teacher should be quick to plan new games and variations of familiar ones, so as to secure the interested participation of all pupils. The sports should be classified — in the teacher's mind, at least — according to the needs of different pupils, and should be so directed as to bring into spontaneous and natural activity the muscles or other organs that most need development, in individual cases.

Other aims of physical education besides attainment of health. — But the attainment and preservation of health are not the only aims of physical education. The body, as the temple of the soul, as the mind's instrument, should be made, not only vigorously healthy, but also beautiful and graceful. Only a slight study of biology and physiology is necessary to make plain somewhat of the great value, to the race, of both grace and beauty.

Manual training. — Another phase of education is manual or *manumental* training, in which the relation of physical and mental powers is most intimate. Both parts of the "muscle-nerve machine" are taught to work together harmoniously; muscle learns to obey nerve, and mind finds the easiest and most economical motor outlet. At first, both muscle and mind work naturally in the large. Movement and thought are inexact and approximate. If the teacher heeds this fact, the young child will be occupied with the large free movements that are natural, instead of being compelled to do the braiding, pricking, and sewing of the modern kindergarten, which require close and delicate adjustment of eye, arm, and hand.

Motor training. — Another most decided advantage of the *motor* training given in manumental exercises is that it reacts very beneficially upon the mind. Every group of motor activities has its "brain center," and when motor activities are called into play these brain centers are correspondingly developed and partial atrophy, which would otherwise result, is prevented.

The principles that should guide in the several forms of physical education may be summarized as follows: —

(1) Play should be planned to develop and train all parts of the body, and especially those that are somewhat defective.

(2) To secure the best results, participation in play should be spontaneous and interested.

(3) Games should be planned that will require, not strength alone, but skill also, — quickness of eye and muscle, readiness and accuracy of judgment and memory.

(4) Grace, beauty, and deftness, as well as health and strength, should be objects sought for in physical education.

(5) Whenever possible, physical education should be under competent professional direction, and should be provided for in prescribed courses.

APPLICATIONS TO MENTAL EDUCATION

Strengthening one faculty strengthens all. — All the faculties of the mind are inherently active and inherently useful, and their normal exercise always gives pleasure. This would be enough to justify principle II.; but another reason for using it is found in the fact that, since the mind is a unit and the faculties are simply phases or manifestations of its activity, whatever strengthens one faculty indirectly strengthens all the others.

The *verbal memory* seems to be an exception to this statement, however, for it may be abnormally cultivated without involving, to any profitable extent, the other faculties.

But only things that are rightly perceived and rightly understood can be *rightly* remembered. Hence, whatever develops the acquisitive and assimilative powers will also strengthen memory; and, conversely, rightly strengthening memory necessitates the developing and training of the other powers.

Mere memorizing a vicious habit. — The proper application of this principle (II.) will cure the common and vicious habit of the lazy teacher and the lazy pupil — the habit of making a *memorizing* of words and forms take the place of observation and assimilation. For, in spite of a general recognition of the validity of the principle, it is by no means generally practiced. Too much stress is still put upon mere memory work, while other mind powers, neglected more or less, become proportionately atrophied, losing ability to function readily and reliably.

Material for developing the intellect and for quickening all the feelings can be found in every subject, almost in every lesson, — food for the intellect, stimulus for the feelings, and so motive for the will. A rule of practice growing out of this principle, and out of the fact that the faculties are naturally self-active, is — *Do nothing for the pupil that he can economically do for himself.* The pupil cannot economically surround himself with the appliances of education, nor can he, without these, give proper direction and suitable incentive to his activities. The appliances must be furnished by the community; the direction and stimulus by the skillful teacher. The duties of community and teacher go no farther, unless in exceptional cases. But it takes courage and energy for the teacher to follow this rule in his daily work. It is so much easier to solve a problem, or formulate a rule or a definition, or make a generalization for the pupils, than to cultivate in them the interest and the power to do these things for themselves.

It must be constantly kept in mind that the child as naturally loves the exercise of the *mind* as he does the exercise of the body; when properly taught he wants to do his work himself.

III. *The first presentations of a new subject should, whenever possible, be made with objects; and all teaching should be largely objective.*

This follows from the fact that all acquisition is effected, at first, through the *senses.* Ready and accurate observation — the function of all the senses — is very marked in children, and just in proportion as this power of ready acquisition is cultivated will the adult mind be enriched, and ready at all times to add, from any source, to its store of facts. It is while the brain is plastic, the sense organs responsive to environment, and the memory tenacious of impressions, that the learner should be brought into contact with as much of the objective world as possible. From such early training two advantages accrue — the mind is stored with images, auditory, tactile, visual, etc.; and the brain being made to function in all its centers, no part becomes atrophied as the child grows older. One value of the first becomes apparent when it is remembered that *all primary thinking is done in images*, that *all* thinking is based directly or indirectly on images. Nouns, verbs, adjectives, pronouns, all express images in the mind of one and call up images in the mind of another. This is true to a very large extent even in the use of abstract terms.

The greatest painters, sculptors, essayists, poets, have been those who received and retained the greatest number and variety of *sense impressions* in their childhood and early youth.

This principle applies in the teaching of any grade. — We have grown accustomed to think of "object-teaching" as something that belongs only in the kindergarten and the primary grades. But it is the method in use in every laboratory, from the high school to the university, and should be used in all grades and in *all subjects*. The principle, if valid at all, is valid in all teaching.

Because all information — whether concrete or abstract — comes, directly or indirectly, by way of the senses, "nature-study" in the widest and most comprehensive sense should have a place in all schools.

The concrete should come first. — Teachers too often, unfortunately, reverse the principle in their use of objects, and present a new subject abstractly, afterward introducing the object-work. For example, a half-term will be spent upon "book lessons" in botany or geology or physics before the student is given the plants and rocks and apparatus to handle. Pupils have been known to study through mensuration in two or more books without ever having seen a cube, a cylinder, or a cone, in the class room; and others are rushed through physiology without knowing the difference, at sight, between a ligament and an articulation.

Some subjects, of course, admit of object-teaching much more readily than others; but objects may be used in one way or another, to good effect, with beginners in every subject, and *objective* teaching can be used even when objects are not employed.

Object-teaching and objective teaching discriminated. — *Object-teaching* is teaching with objects or pictures; *objective teaching* is making a subject concrete, by illustrating it from the pupils' everyday experiences — is objectifying it, instead of giving it an abstract presentation.

IV. *Teaching should proceed first by analysis, then by synthesis.*

The validity of this principle rests upon the essential processes in the act of learning. These processes are acquisition and assimilation; acquisition is analytic and assimilation is synthetic, the whole act being analytico-synthetic.

If the child, in teaching himself, makes a full (sensory) examination of a new thing, passing — as he does — from a general perception of the whole to a more or less detailed perception of qualities and parts, then surely that is the manner in which the teacher should present new knowledge-material. Whether the object is a ball or an air pump, a flower or an epoch in Roman history, the first presentation of it should be as a whole; and afterward study should be directed to the characteristic properties and constituent parts, or subdivisions.

The rule may have exceptions. — Occasionally, departure may profitably be made from this order of procedure, as when the teacher draws a picture slowly on the blackboard, calling attention to the parts as they develop under the chalk; or when some apparatus is set up, piece by piece, in view of a class. But this is done — with new objects — only to secure variety, or to arouse curiosity as to "what it is going to look like," and the completed drawing or apparatus is sure to be analyzed into its parts again.

The wholes must be within the learner's comprehension. — But that which tests a teacher's judgment in using this principle, is the selection of lesson-wholes. By an adult or an advanced pupil the earth may be readily grasped as a concept-whole; but that portion of its surface contained in the school yard, or in the garden, or a bend of the lane, may be as large a lesson-whole as it is wise to present to the beginner in geography.

Synthesis should follow analysis. — The natural movement of the learner's mind is toward a putting together again of the parts into which any whole has been analyzed. Hence the teacher should follow the analytical presentation with a synthetic one, having the pupils put together, either in object or in thought, the parts into which any whole has been separated. In some cases this can be done in a moment and immediately following the analysis; in other cases the synthesis should constitute a more or less extended review of the lesson-whole.

For instance, after a bit of earth-surface has been analyzed in a geography lesson, the pupils may synthesize it in miniature in the sand pile or on the molding-board. In physiology, after the whole body has been studied by successive analysis into systems, organs, tissues, cells, a review will be most profitable in which the class, in successive lessons, synthesize cells into tissues, tissues into organs, organs into systems — all interconnected and correlated on the basis of function.

Synthesis has a wider application. — But the term "synthesis" may be given a wider application. Concept-making is a synthesis; marks or attributes of a single object or of several objects of the same kind are put together to represent a whole class. So, also, when a new object or a new idea is put in the class where it belongs, the act is a synthetic one. This classifying is essentially assimilative.

V. *Teaching should proceed first inductively, then deductively.*

This principle illustrated in the development of the race and of the individual. — This principle comes almost axiomatically from the same facts that underlie III. and IV. Induction means in teaching, and will do for teaching, just what it means and has done in scientific investigation. Just as in the growth of the race the discovery and verification of general laws have followed the observation of many particular facts, so the individual, repeating the development of the race in his own, exercises the power of judgment in its natural order of perceiving the relations of objects and facts observed, and generalizing conclusions therefrom. And in this case again, as in every other, the natural movements of the mind indicate the road the teacher is to travel. The natural movement of mind is from particulars to the general; but the process becomes more frequent, more certain, and more fruitful, if it is performed consciously. Method in teaching has been summed up as causing the learner to pass consciously from single percepts to concepte, from concepts to judgments.

The principle applicable in all branches. — Every branch of study may be taught, in whole or in part, in accordance with this principle.

In arithmetic pupils should be brought to understand processes, and from these to generalize a rule for themselves. This is, plainly, contrary to a practice not yet wholly obsolete, of having the pupils *memorize a rule* before undertaking to solve problems. In grammar, pupils should be trained to generalize rules of syntax out of the various constructions of words as used in good sentences.

In the higher branches, the principle of inductive teaching has even greater validity, especially in the observational and experimental sciences. It is now very generally applied also in teaching history, sociology, and the many subjects growing out of these.

Deductive teaching has its place. — But in much the same way as synthesis should follow analysis, should deduction follow induction, both because it is a test of the accuracy of the observations upon which the induction rests, and the judgments by which it was reached, and because it is the means of applying practically the generalized knowledge obtained by induction.

After a conclusion, a rule, or a definition has been established by inductive processes, the pupil should be drilled in making correct applications of it to other particular cases.

To advanced students (the term "advanced" is used only in a relative sense) who have already been pretty well disciplined in inductive methods of study, a subject may sometimes be advantageously presented first deductively. To those who have accumulated enough experiences wherewith to interpret them, conclusions, rules, definitions may be presented ready made, and used as the starting-point of fresh investigations, or worked back from to the particular cases that warrant them. The principle, "From facts to definitions and rules," simply means that rules and definitions shall be brief, compact statements of facts and relations already perceived — a sort of crystallization out of the "mother liquor" of thought and experiences. But even with advanced students too frequent use of deductive method may easily and quickly become injurious.

VI. *The work and contents of the learner's mind must be brought to adequate expression.*

This principle rests firmly on the fact, sometimes apparently forgotten, that the final movement or operation of the mind is *expression*. It has been said with great truth that the root-weakness of teaching as usually done is giving constant *impression* without calling forth corresponding *expression*. In spite of the discovery of true fundamental principles centuries ago, the stress has been laid, in teaching, upon *acquisition*. This is largely true yet, because it is easier to instruct than to develop and train, and because so many teachers have neither knowledge nor skill wherewith to follow the better way, although they know there is one. The teacher who gives right instruction, and so stimulates the growing mind that it readily assimilates knowledge-material, but who makes no special effort to secure adequate expression of knowledge and thought, falls as far short of his duty as the trainer of an athletic team, who would see that his men had food proper in quality and quantity, and that they observed the hygiene of digestion, but who would require of them no definite, carefully directed exercise. In intellectual training, as in physical, the use of knowledge, power, and skill in *action*, in doing something, is the real end and aim of all the previous operations that lead up to it. The principle should govern the teacher's daily practice, also, because expression is the *only test* of teaching, and is the only means by which teaching can be made valuable to the individual himself or to the community.

Expression the test of teaching. — Thought and feeling and purpose find expression in action, in private character, in civic conduct, in language, and in art. If teaching does not result in clear and correct language, sterling character, rectitude of action, and genuine patriotism, then it has failed wholly. And when its failure is not utter, it fails in proportion as its results fall short when measured by these several tests.

And these standards of the teacher's success should be applied daily in the school life — on the playground and in the class room — as well as in the broader life of the mart and the forum. If the boy or girl does not do independent thinking and use good language to express it, is not courteous, truthful, and honest, and is not interested in the welfare of the community, then the blame must be laid on both the content and form of popular education, and the teacher should be held not wholly.

perhaps, but largely responsible. By the fruit we know not only the tree, but also him who has digged about it.

It is only through expression that the condition and growth of the individual can be understood and tested; only through expression that physical strength and health, intellectual capacity, and ethical character can take effect upon others.

VII. *Teaching should constantly show some use of the thing taught.*

One of the most marked and persistent movements of the mind is toward the discovery of *function*, or the use of things. "What's it for?" is an invariable question of child or adult when examining a new thing, whether the new thing be a toy or a system of political economy.

As soon as a boy learns the first part of the multiplication table, for example, he should be given work in which he can use it as an instrument, and which will enable him to see that multiplication has uses outside the schoolroom. So, even to children, the practical value of history, civics, and geography can be illustrated by applying the lessons learned in these branches to the actual conditions of the social environment.

Some values are higher than the so-called "practical." — But the word "use" is not intended to mean only what is usually understood by "practical value."

Many subjects of study that have a legitimate place in any good curriculum have values that cannot be measured by yardsticks or counted in dollars. The high and true values of such branches need to be shown in modern education more than ever before, and to this end there are needed teachers who know and feel and *live* these values.

Surely we can get the utilitarian and industrial good out of the new education without letting go the spiritual and ethical of either the old or new.

VIII. *All teaching should keep in contact with the learner's interests.*

This does not mean that teaching shall merely follow the lead of the learner's interests. Some critics of the doctrine of interest have created this fallacy to lend point to their objections.

Two ways of applying the doctrine of interest. — But the doctrine of interest may be applied in practice in two ways, viz.: (1) Teaching should follow the child's normal and healthy interests as far as they go, and (2) should then create, intensify, and direct new ones. It will bear much repeating that the chief problem of the teacher is to keep alive the multiform interests of childhood, and revive any that may have become atrophied.

It is not too much to say that no work should be continuously demanded of the pupil, in which he feels no interest —*provided* it be understood that the result of good teaching is always to *create* interest and make it effective as a motive for work. All education should be *liberal*,— that is, *free*, — free because of the enlisted interest of the learner, free because he is through interest liberated from any thraldom of drudgery.

Drudgery is beneficial.— The doctrine of interest does not for a moment preclude the idea that drudgery is necessary and healthful; that work that is in itself hard and distasteful is a splendid discipline. It should in every case be interpreted to mean in its application, that the drudgery must be done, the hard and distasteful work gone through thoroughly, *because* of an abiding interest in something to which they lead.

It is a sort of crime to compel children to do distasteful things without so managing that they shall see the desirable end to be gained, and it is also the poorest pedagogical policy — it is like running a fine machine without any lubrication and with brakes on.

Hard work is not in itself unpleasant. — A party of boys will toil and sweat in lugging heavy logs to a pond to make a raft. This does not suggest that study shall be turned into play; but that if teaching can succeed in touching those boys' interests they will toil and sweat with raft-building ardor over any lesson that may be set.

Interest the summation of feeling. — Interest is the summation of feeling, since in it all emotions, all affections, all desires, either directly or indirectly, converge. Feelings are either pleasant or unpleasant; and we are interested in attaining that which excites pleasure and in avoiding that which causes pain.

As said in Chapter II., the first effect of sense perception is the excitation of feelings; and the first and strongest conscious movements are expressions of feeling. These facts are guideposts in teaching.

IX. *All modes of formal education should afford the learner only the best models.*

This rests on IX. in the previous chapter, and requires no further elucidation. When we remember the imitativeness of the young, it becomes axiomatic that in language, taste, character, conduct, habits, the teacher should be a model to his pupils.

X. *There should be frequent repetition of principles, processes, and forms of expression.*

This is a pedagogical commonplace, but the spirit of it is so often killed in the carrying out of its letter that it is worth while to repeat it. It is one of the most important principles by which the teacher may direct his work, and rests upon the soundest psychology.

Psychologic effect of repetition. — Every time an impulse travels inward from a sense organ that is responding to some stimulus, it is easier both for that sense organ to respond again to the same stimulus, for the afferent nerve to carry the impulse, and for the impulse to complete itself in perception and in apperception.

Every time an outgoing movement of desire, or thought, or will flows down a motor nerve and takes effect in action or inhibition of action, it is easier for the action or the inhibition to be produced by the downflow of a similar impulse sent along the same nerve track. Every time an idea quickens feeling, or awakens memory, lights imagination, or makes will kinetic, it becomes easier for that idea to produce the same results again. Hence the necessity for repetition and re-repetition. Thus habits are formed, and habits make character — *are* character.

But the repeating should be so brought about by the teacher as to avoid "grind" or mere treadmilling. A discussion of methods of applying this principle will be found under "Reviewing."

CHAPTER IV

THE LESSON

The lesson the vital point. — The lesson, in its assignment, preparation, and recitation, is the point of vital contact between the teacher and the class, and especially between the teacher and the individual pupil.

Lesson method affected by kind of school organization. — It is mainly through the lesson that the transfusion of the teacher's personality, the passing over to the pupil of the teacher's enthusiasm, his power, his knowledge, his skill, his sympathy, and whatever of help he can give to growth of intellect and character — takes place. Although the teacher may do much to direct thought and feeling, through right use of opportunities afforded by the daily opening exercises, the recreations of the playground, and other points of contact with the school as a whole, yet it is in the handling of the lesson that most can be done to make each pupil feel the delight of learning and the value of strengthened character. Consequently, in formulating a method system, the science of the lesson should be the first object of careful study, after some acquaintance is gained with foundation principles. The discussion of lesson method is modified from the first by the character of school organization under differing conditions. Some things are to be said that will apply only to the ungraded rural school, others that will apply only to graded work, and still others that may touch only the conditions of the college.

Elementary education the most important. — It may be stated here again, however, that in what follows throughout these pages, the work of those who have to do with elementary education is most kept in mind. This is not because the teachers in the lower grades need to study method more than those who work in the high school or in the college, but because teachers of elementary grades, and especially those who have the care of rural schools, are far more numerous than any other class, because they work under peculiar disabilities of various kinds, and, further, because if elementary education proceeds according to right method, secondary and higher education will almost take care of itself under any sort of teaching.

Consideration of the lesson falls under three heads — (1) assignment of the lesson; (2) preparation of the lesson; (3) recitation of the lesson.

ASSIGNMENT OF THE LESSON

To assign a lesson is to designate a more or less definite portion of subject-matter to be *acquired*, *assimilated*, and put into some form of *expression*. This is true of any sort of "lesson," whether it be a new playground game, a new movement in physical culture, a bit of nature study, or a page of Sophocles.

The teacher's knowledge. — In order to assign a lesson well, the teacher must not only know the textbook used, but must know the *subject*, also, — must know it so well that he can assign lessons in proper sequence and of suitable length, without a text-book.

Before he is competent to handle lesson-matter in any way, he must know somewhat, at least, of the relations of subjects to one another, the mutual relations of the divisions of a subject, and the relation of the lesson to the subject of which it is a part; and he should further know the condition and attitude of the learner's mind regarding the lesson-matter about to be assigned. All this may be put briefly into the statement that the teacher must know both subject-matter and learning mind.

Principles governing Lesson Assignment

1. *Quality* of work is more important than *quantity*.

The tendency in every grade and in every school, except the genuine kindergarten and the genuine university, is to measure progress by the number of exercises gone through, or the number of text-book pages gone over. Popular sentiment, both of parents and of pupils, demands a progress measurable by the number of pages or books or subjects "finished."

Such a condition of things is due in part to the teachers who find it difficult to teach without being in servitude to the text-book, or to measure progress otherwise than by pages; in part to boards of education that force a multiplicity of text-book subjects into school curricula. The latter is an evil of management; the former an evil due to lack of adequate preparation by teachers for their work.

The rule should be "short lessons well mastered." — The teacher who knows how to assign short lessons, and get them thoroughly prepared and recited, will carry his pupils in a more rapid and genuine progress than the one who drags his pupils over long stretches of poorly prepared matter.

The measure of length. — And "short" is a relative term; what is short for one class may be long for another, or what is short in one subject may be long in another. The measure of length should be based on the average capacity of the class, — the lesson assigned may cover one page or twenty, may involve one exercise or fifty; but it should not be quite so difficult that the average pupil cannot, by healthy effort, prepare it a *little within the time* allotted for preparation.

The method good only in good hands. — But this plan will prove more unfruitful of real advancement than the one criticised above, unless the teacher requires thorough preparation, — thorough acquisition and assimilation, — and unless he is able, during the recitation, to illustrate the lesson abundantly, to connect it closely with the pupils' other knowledge, and to stimulate them to a still closer assimilation. The teacher who can do these things will soon find his pupils able to cover actually more ground, measured by pages or subjects, than they can under the other plan.

2. The pupil should be enabled to begin the preparation of each lesson with *forewarned intelligence* and *fresh zest.*

Two of the most important of the teacher's functions are to show the pupil *how* to study effectively, and *to stimulate* him to do so. The recitation affords the best opportunity for exercising these functions, but they should have a prominent place in the assignment of the lesson also.

"Preliminary drill." — Rarely should a lesson or exercise of any kind be assigned without a brief "preliminary drill," or preview, in which the salient points are indicated, the special difficulties warned against, the relative values of the several lesson subdivisions suggested, and the connection between the next and the present lesson shown. Some point of the new lesson should be brought into contact with the interests of the pupils, who should be brought to feel, if possible, that the lesson they are about to study is worth something to them in other ways than merely as a means of securing " marks." As a help to this end, the lesson assigned should, when possible, show some completeness in itself, should appear to the learner as an organic part of the whole subject, or of some subdivision of it. Teachers sometimes utterly violate this rule by counting the number of days they can give to a certain subject, and dividing the whole number of pages in the text-book by the number of days, to determine the daily stint of the class!

The extent and completeness of the preliminary drill must be determined by the character of the lesson and the needs of the learner. Sometimes, preparatory to taking up a new and difficult subject, it may be profitable to use the whole recitation period in explaining principles and processes, or stating fundamental facts. At other times a few words of direction or suggestion will suffice.

In assigning, as in any other work with a class, the teacher's manner and personality count for as much as sound method, — perhaps it should rather be said, the teacher's manner and personality constitute an essential of any good method. He must himself be interested in the pupils' search for truth, and in the growth that always comes from this search. He must show by his own devotion that truth is a lovable thing, and inspire his pupils with desire to enter fields new to them. Each new lesson should be so assigned and discussed as to make the pupils feel that they have had a gate into new pleasures set ajar for them.

Methods of Assigning a Lesson

A lesson may be assigned either by topics, or by pages, or by both combined. If the class is a primary one, the teacher may say, "To-morrow we shall talk about leaves, and I want each one of you to bring to the class at least two different kinds of leaves, plucked fresh from the trees." If the class is in the second or third year of school, the teacher may say, "For next lesson we shall study from page 10 to the bottom of page 14." If the class is more advanced, he may say, "We are ready for the subject of percentage, and I want each of you to be able to tell what it is and what its principal applications are. You will find these matters treated between pages 40 and 48." In still more advanced classes, the lesson may be assigned solely by subjects and topics, and the pupils required to find all they can upon them, in various text-books and reference books.

Advantages of the topic method.—The advantages of a right use of the topic method are marked. In the first place, it frees the student and teacher from the tyranny of the single text-book,—even when only one book is used,—and gives them opportunity to study the *subject*. If there were no other result of its use than this freedom from the fetish worship which so often marks the attitude of both teacher and pupils toward a text-book, it would have ample justification as a pedagogic method.

Other books than the text-books desirable.— But to get the best results from the topic method there must be reference books, and frequent and intelligent use of them. For purposes of topic study, any book containing information on the subject under investigation is a reference book. Other text-books than the ones in use, cyclopedias, dictionaries, maps, railway folders, advertising pamphlets, magazines, newspapers, all are "reference books." Of course, no institution from the grammar school up, that is worthy of its name, is without a reference library of some sort; and even the poorest rural schools can, with a little effort, secure some equipment of the kind indicated above, some of the matter mentioned being obtainable for the asking.

Value of reference books. — The full use of the topic method drills the pupils in the searching of books for knowledge on a specific point, and thus gives them valuable practice in handling a book as a *tool*. The value of this drill is negatively illustrated, sometimes, by the inability of pupils, brought to high-school maturity on the so-many-pages-a-lesson plan, to find the discussion of a given subject in an encyclopedia. It is no very uncommon thing to find pupils trying to do high-school work who have not even learned the ready and intelligent use of the *index* in a text-book. Again, if pupils have opportunity to use reference books in preparing lessons, they can bring to recitation more facts upon a given subject than if they have all gained their knowledge from the same text; and this increase in the number of facts is usually accompanied, and its value enhanced, by differences in the forms in which the facts are stated. There is variety, and this gives zest and a wider horizon.

Finally, the use of the topic method solves what is, in many schools, a serious problem, by doing away with the necessity for uniformity in text-books.

Dangers of topic method. — But it is true of the topic method of assigning lessons, as it is of any other useful method, that in the hands of a poor teacher it may easily become a cause of very sleazy, superficial work. It requires clear and close connecting of subjects, and making plain the important facts and their relations. If used with pupils wholly unaccustomed to it, it confuses them and leaves them discouraged and helpless. To assign a lesson by the topic method to a class of crude pupils would be much like taking a city-bred child into the heart of a wood, and requiring him to find his way out alone.

Combined method best with intermediate classes. — With intermediate classes, or with classes previously accustomed to studying only a certain number of pages in a text, but now ready to be trained in the freer method, it is better to assign a lesson by topics in connection with a definite number of pages in the text-book, stating the topic, and giving the pages on which it is treated. This will be found a convenient way of changing the study habits of the pupils from routine text-book work to freer investigation of subjects.

Most modern text-books have topical summaries at the ends of the chapters, and also good indexes, and constant use should be made of these aids, by both teacher and pupils.

PREPARATION OF THE LESSON

The preparation of the lesson may be viewed from two standpoints, — that of the pupil and that of the teacher.

Preparation by the Pupil

For the pupil, acquisition and assimilation. — On the part of the pupil, preparation is the process of acquiring and assimilating the portion of subject-matter marked off in the assignment of the lesson. Too often the student gets no farther than mere acquisition, and simply *memorizes* the lesson. Assimilation is difficult for the pupil, and testing assimilation is difficult for the teacher; it is much easier to memorize and to test memory. Pupils have been known even to memorize verbally the demonstration of a theorem in geometry!

One of the first duties of the teacher is to show the pupil how to prepare a lesson, — how to direct effort, and to economize time; how to exert thought power, and to question himself and his text-book while he is studying; and especially how to *enjoy* the processes of learning facts and understanding them. Under this sort of direction the pupil will find that he can economize time and effort, can "get the lesson" better and quicker, by going over it not more than three times.

How to study. — The first time, he looks through the whole lesson in the light of the preliminary drill his teacher has given him; gains thus a general comprehensive idea of the lesson-whole, in accordance with the analytic principle "from the whole to its parts"; refreshes his memory on the last lesson and its connection with the present one; sees at what points the lesson touches his own experiences; and notes the parts that are likely to require hardest study for their mastery.

The second time, he *gets the lesson* as he goes, mastering it step by step, putting its facts in the memory, and weighing their relations and the reasons for their being what they are, challenging the book's statements, looking up other authorities than the text, and forming his own opinions. Pupils should be encouraged, at first, and later required to go beyond the limit of the textbook in their preparation of lessons.

The third time he glances the lesson over again, just before recitation, to revivify and fix the salient points, and to make sure he can sustain himself in the coming lesson-discussion with the teacher.

The student who does not feel himself grow, his mind glow and sparkle, his desire to know increase, while "getting a lesson" in this way, is either suffering from poor teaching, or is beyond the reach of good teaching, and might about as well go back to the old plan of conning a lesson over "ten times."

Of course, the method of study outlined above must be grown into; but from the very first, when the beginner can make little or no preparation of lesson material, to the highest class, the teacher must have such a plan of study as this as the ideal toward which to train his pupils.

Best time for studying.—The best time for preparing a lesson, the student soon finds, is, as a rule, just after it has been assigned. If the recitation has been an inspiration and a stimulus, and the preliminary drill has skillfully given hint of the possibilities of the next lesson, the pupil will feel more like studying, and will be in better trim for it, just after recitation, than he will when the glow of successful and enjoyable effort has faded.

Preparation by the Teacher

The teacher's preparation for each recitation should be as much more careful than that expected of the pupils as the teacher's capacity and responsibility are greater than the pupils'.

In the preparation rightly demanded of the teacher, should be included not only the general professional training and scholarship which he has already attained, but also a special study day by day of each lesson which has been assigned to the class. The results of such preparation are definite and clear-cut work in the recitation, a saving of time by the cutting out of irrelevant matter, greater freedom and flexibility in handling the lesson, and a marked invigoration of the pupils' interest. Pupils are always impressed by genuine and exact knowledge, and give more ready respect and obedience to teachers that have it than to those whose knowledge is shallow and inexact.

Of course, if the teacher is fit, this daily preparation will consume but little time, and will be mainly a planning of special lesson methods. Yet some of the best teaching has been done by teachers who have had to work hard and long every night in order to keep ahead of their classes the next day. Their own recent and lively experience with the difficulties of a subject makes them more sympathetic with their pupils, and enables them more easily to direct the efforts of others in overcoming these difficulties. Also, if the teacher faces his class fresh from the search for and discovery of some truth, he will be able to put the glow of his own enthusiasm into his pupils with a success and an enjoyment of their pleasure which he finds it difficult to attain after he has grown overfamiliar with his subjects.

But even when the teacher's scholarship is wide and exact, it will not be amiss for him to refresh his memory as to the manner and amount of treatment given any particular lesson by the text and reference books that will be used by his pupils. This is in order that he may know what justly to expect of them in recitation, and that he may be able to aid them in the orderly arrangement of the particular facts they have gathered.

Moreover, the teacher will find, after but a short experience, that a knowledge which seemed sufficient for his needs as a student is inadequate for the demands of thorough teaching—that a *reciting* knowledge and a *teaching* knowledge of the same subject are quite different in quality. He will be able to find illustrative use for every scrap of information he may have about anything. From whatever excursion the teacher may make into any field of knowledge—and he should make many—let him bring back something wherewith to enrich his teaching.

He will soon feel the need of studying the lesson in the light of what he knows of the mental characteristics of individual pupils, in order to devise ways of making the unclear points of the subject plain to each one. He must even study the rhetorical form of his questions—how to begin so as to excite and hold attention, how and when to lay stress and emphasis, how to make his own expression a model for the class.

Oral work requires most careful preparation.—But it is for oral work and the successful conducting of recitations in the lower grades that the teacher must make the most careful preparation, working out each lesson plan in closest detail, yet holding each plan subject to easy modification in actual execution. The fresh and eager interest of children, their incapacity for prolonged attention, their searching questions, their instant perception of sham interest and sham knowledge in the teacher, all constitute a test of skill to which few teachers are fully equal.

CHAPTER V

THE LESSON (*continued*)

RECITATION OF THE LESSON

On the part of the pupil, the recitation of the lesson is a reproduction of facts and the expression of thought about them.

On the part of the teacher, the recitation is a test of the pupil's acquisition and assimilation, through expression. These are the bare essentials of a recitation; much more is involved.

Some recitation values. — It is during the recitation that the teacher may come into that most intimate and vital touch with the pupils — with each individual consciousness — which gives him opportunity to mold them into intellectual and moral form, almost to re-create them in his own image.

The mind of the pupil may be inert and indifferent, even repellent, toward the subject-matter of the lesson; the lesson may be a cold, dead thing, and the two, the learner and the lesson, may be in contact throughout the study and the recitation, without any real union. But if the quickening, electric current of the true teacher's informed and skillful personality flows through from one to the other, they become fused into one — there is a true welding.

It is by his method in the recitation that the teacher must reveal to his pupils the loveliness and desirableness of knowledge and wisdom, must whet their curiosity to know, and show them how and with what to set to work to satisfy it.

Purposes of the Recitation

1. The first purpose of a recitation is to find out *what* the pupil knows and *how* he knows it.

To discover the what is easier than to discover the how. — Too frequently, teachers are content to stop with only the first part of this purpose accomplished. They conduct the recitation merely as a memory test, and the pupil is required to do little more than yield up the words he stuffed himself with in preparing the lesson. To find out what the pupil knows, while not always easy, is at least easier than to test the thoroughness and manner of his knowing. The pupil may have come into the kingdom of knowledge by some other way than the straight and narrow one of individual effort.

Sometimes, too, the teacher finds that the pupil's method of gaining his knowledge and assimilating it has originality; the learner has dared to do some thinking of his own, and has found more rational and less devious ways of doing things than those set forth by text-book rules. Happy is such a pupil if he has a teacher worthy of him, who will not try to force him into the devitalizing uniformity of a ready-made process or rule.

Psychological significance of the how. — The *how* of the pupil's knowing has a deeper psychological significance too. One learner may have his knowledge as a store of visual images; another may have his concrete concepts made up of complete percepts — percepts formed through all the senses; while still another may have looked beyond sensory images and concepts formed from them, to the abstract relations of the objects of his knowing. On these points the teacher must make most careful study of his pupils, so that he may understand the limitations and capacities of each one, and so give each one just the help he needs.

2. Another purpose of the recitation is to find out what the pupil does *not* know and *why* he does not know it.

Concealment of ignorance. — It might seem at first glance as if this purpose would be accomplished in the accomplishment of the first, but it is by no means necessarily true. A good many pupils become peculiarly skillful in so throwing the dust of a little knowledge into the teacher's eyes as to blind him to their ignorance. Pupils are always ready to tell — as best they can, without too much effort — what they know. They are almost always equally ready to conceal what they do not know. It is just at this point that some quite prevalent recitation methods need thorough reformation.

So long as a recitation is looked upon by both teacher and pupil as an occasion for making the best possible show of knowledge, and for getting "good marks," just so long will pupils hatch plans for displaying knowledge to the best advantage, and for resisting any effort to uncover ignorance; so long will a "foolable" teacher be considered fair game for all sorts of devices to secure the coveted "pass-marks"; so long will the pass-mark, or certificate, or diploma be made the ultimate goal of the pupil's study, instead of true learning and intellectual and moral character.

Knowledge helped by a recognition of ignorance. — It is a high privilege of the teacher to show by his own attainments and character how priceless is true knowledge, and true growth from assimilation of it, and to make it plain to those whom he would teach that a clear understanding of the limits of one's knowledge, a candid and unshrinking summing up and confession of what one does *not* know, are necessary to progress.

Marking cultivates dishonesty. — If only the boys and girls in the schools, and the students in colleges and universities, could be led to see the futility of marks that stand for no real attainment, and if they and many of their teachers could be brought to a realization of the sham of much that is inherent in the marking system, the heartiness and genuineness of school work in all grades would be wonderfully increased. And there would soon come that saving regard for *truth* and *honesty* in all their forms, which is so sorely needed by the adult citizen in every relation of life.

Teaching skill needed to discover ignorance and its cause. — But even when the pupil is willing to reveal his ignorance, the teacher still has need to probe skillfully to find the weak places in the learner's knowledge of the lesson, and especially to discover the cause of weakness. He must find out why the pupil does not know and understand, whether it be on account of laziness, or inability, or some odd twist of mental vision. Often it happens that the teacher can, with a keen and suggestive question, cut some Gordian knot of difficulty for the pupil, which — owing to their differing relations to the lesson — the teacher cannot discover, unless he makes a special hunt for the pupil's defects of mastery.

Questioning better than telling. — And a question which reveals to the pupil's own thought the solution of the difficulty he has met, or which stimulates him to find the way through for himself, and throws a flash-light into the darkest place, is far more effective and requires of the teacher far more alertness and care, than any amount of mere telling. This is the value of the Socratic form of questioning. A judicious use of it will train pupils into a positive dislike of being told anything that they can be led to find out for themselves.

3. A third purpose of the recitation, to which the attainment of the fundamental aims just described is preliminary, is the aiding of the pupil to a clear *interpretation* of the lesson in *terms of his own previously acquired experiences*.

No lesson should be taught unrelated. — The teacher must vigilantly guard against presenting each lesson as a sort of "cross-section" of a subject. On the contrary, especial care should be taken to make plain the relations of the lesson to the subject of which it is a part, and to other subjects of which the learner has some knowledge and in which he has some interest. Especially must the lesson be made to touch the pupil's present interests at as many points as possible, and to awaken new interests.

4. A fourth purpose of the recitation is to explain difficulties *upon which the class has exhausted its efforts.*

Difficulties are to be explained by the teacher only at recitation, and then only when he is convinced that a majority of the class have put forth their best efforts and have failed. And even then it is often better for the teacher, instead of giving the necessary explanation himself, to call upon some one of the successful minority to explain the difficulties that have withstood the resolute attack of the others. The general rule may be stated thus: *Never explain anything which the majority of the class have not done their best upon, and which some member of the class can explain.*

Under good teaching, a lesson will rarely have to be reassigned, and when it is, or when the class is dismissed for not having the lesson properly prepared, the disgrace should be keenly felt by every member.

5. A fifth purpose of the recitation is *to train the pupils in original expression.*

No exercise complete that does not cultivate all three mental operations. — Throughout all his work, the teacher has need to remember that the operations of the mind are acquisition, assimilation, and expression, and that no exercise is complete in which the mind does not function *in all three.*

Of course, acquisition should receive especial stress in some exercises, assimilation in others, and expression in yet others. It is usually expression which suffers most, for various reasons. In their class-room practice teachers are too prone to accept any sort of answer, — fragmentary, unsyntactical, unrhetorical, monosyllabic, slangy, — if it only shows the pupil to have some acquaintance with the facts of the lesson, and a little understanding of them.

Recitations should usually be conversational. — Carefully worded, clearly expressed, concise answers, though not attainable without gradual and prolonged training, should be the ideal toward which the teacher carries his class. As often as possible and as nearly as possible, the oral recitation in any grade should take the form of a conversation between pupils and teacher, in which both strive for fluency and accuracy of language. It is not desirable that the teacher should criticise every error in expression committed in recitation. To do this would be to lose other values of the recitation without gaining the one sought. But little by little, — by correcting a word here, a phrase there, a wrong pronunciation, a slovenly enunciation, and by careful correction of all written work, the pupil will be brought into habits of both free and proper expression. After a while the teacher may refuse to give full credit to any answer that has not verbal correctness and fluency as well as accurate statement of fact and clearness of thought.

Pupils should answer in their own language. — As an essential factor in expression training, answers should, as far as possible, be made in the pupil's *own language*. And this is true, no matter how crude such expression may at first be. A past generation of teachers — and there are a few survivors from it — insisted upon a reproduction of the exact language of the text-book, saying, by way of finality, that such language could hardly be improved upon. Granting this to be true, though the statement is open to grave doubt, the fact still remains that it is the pupils' language that needs improving by use; and as the language of the text is not the pupils' language, their use of it is no test at all of their power either of thought or of expression. In fact, when a pupil answers in the exact language of the book, it may be taken almost as *prima facie* evidence of his ignorance of the matter under discussion. The teacher who *teaches* will rarely, if ever, accept an answer framed *only* in the wording of *the book;* he will insist upon the learner's thinking for himself and expressing his thought in his own language.

6. The sixth purpose of the recitation, and the one which sums up all the others, is the *building of character.*

Every recitation a means of building character. — Any recitation may be made to help in attaining this supreme end of the teacher's work. Even physical character can be strengthened by insisting on correct positions in sitting or standing during the recitation. And while it is usually and rightly considered to be the main purpose of the recitation to form intellectual character, yet there are few recitations that do not afford opportunity for direct or indirect building of *moral* character also. Every subject taught has some ethical content.

Biography, history, and literature are conceded to afford the best means of moral culture, but the teacher who is master of both matter and method can make his pupils feel and enjoy the moral power of an algebraic formula or an axiom of geometry; and the natural sciences, rightly handled, are especially productive of ethical influences.

And aside from whatever there is of moral value in the subject-matter, the recitation can be so conducted as to inspire in the learners love of truth for truth's sake, honesty in the search for it, and readiness to confess failure to find it.

Forms of the Recitation

A lesson may be recited either orally or in writing. The oral recitation may be in the usual form of question and answer, or may consist of a discussion, by the pupil, of some topic assigned by the teacher from the lesson-matter. Lecturing by the teacher, though entirely legitimate under proper conditions and for certain purposes, is in no sense a recitation.

Question and answer plan most effective. — The question and answer plan will usually be found most effective, since it is the best, if not the only way of securing all the ends of a recitation. It best enables the teacher to explore the pupils' knowledge and discover their ignorance. It is only by the probe and scalpel of the skillful question that the teacher can find and lay bare the particular defects of each pupil's mastery of a lesson.

No other form of recitation can have the value of the quick, sharp, but sympathetic, encounter of question and answer, with teacher and pupil face to face, each alert and mutually responsive. The results are a stimulated and increased activity of all the mind's powers. The successfully conducted oral recitation is a good illustration of the law of the conservation of energy, for it is not possible for the teacher to get vim and quickness out of a class in recitation unless he has put vim and quickness — force — into the class.

Topical plan affords better opportunity for expression. — On the other hand, the topical form of recitation, in which each pupil says what he can in a given time, on some topic of the lesson, affords better opportunity for expression and for that consecution of thought which must precede clear and full expression. When the teacher frames questions so as to develop the subject of the lesson in the consciousness of the pupils, he is really doing some of their work for them by analyzing and synthesizing the lesson-matter, instead of having them do so.

This may help to explain a fact, alluded to before, that if the pupil some time comes to teach, he finds his *reciting* knowledge of a subject far short of a *teaching* knowledge. As a teacher, he must analyze; as a pupil, his teacher too often analyzed for him. Hence the value of the topical recitation, which gives opportunity to the pupil to develop his own thought in his own way.

But the pupil's discussion of a topic, even though it be pretty full and clear, needs usually to be supplemented by the teacher's questions and those of the class.

Dangers of the topic method. — The chief difficulty attaching to the topical recitation is that of securing the attention of the whole class to each discussion. Even in advanced classes, often, the pupils do not all attend to a report which may last only five minutes.

This difficulty is greatly aggravated by a grave misuse of the topical method, of which some good teachers are occasionally guilty when a little pressed for time. In order to "cover" a certain amount of ground in a specific time, a different topic is assigned beforehand to each pupil, so that each one prepares on his own topic only, and not on the whole lesson.

Dangers of the lecturing plan. — Lecturing by the teacher is apt to be a questionable practice at best, since it violates the principle of the pupils' self-activity, and makes them more or less passively recipient. It is not necessary, except to give information which the pupil cannot get for himself; even then it is best used sparingly, and is made most effective by frequent reviews.

Lecturing in the class room is a survival from the times when libraries were few and poor, text-books unattainable, and the inductive method of study unknown. It is totally out of place now, as a regular method of instruction, except in universities, where students are mature enough and skillful enough to profit by close attention and the taking of notes.

Written recitations. — Occasionally a lesson should be recited, in whole or in part, in writing, upon blackboards or tablets.

There are several good ends to be gained from a written recitation that are not reached by the oral. (1) It gives a drill in rapid writing, making the pupils use penmanship only as an *instrument* — something the work of the penmanship class does not accomplish. (2) Writing a recitation accustoms the pupils to spell by *eye*, and they cannot learn to spell English correctly otherwise than by forming correct *visual* images of words. (3) Through a written recitation each pupil may be tested upon the whole lesson. (4) Writing the recitation affords a training in one of the most valuable forms of expression. The pupil learns to think and write at the same time, and to express thought in neat and correct manuscript. It hardly needs to be said that neat, clearly written work, in which the language is an *adequate* expression of the thought, is the ideal the teacher must persistently hold before his pupils and himself.

The written recitation, like the oral, may be either question and answer or topical. If the first, then the teacher should number each question before asking it, and the pupils' answers should be numbered to correspond; if the latter, the answers will be brief compositions upon the different topics of the lesson.

The Teaching Acts

The most important fact for the teacher to remember —next to the fact that the mind is naturally self-active —is that the mind functions in three operations,— acquisition, assimilation, expression. The mind must acquire knowledge-material, a stock of facts, ideas, words; it must assimilate these into its own thought-substance, by the elaborative processes of feeling, thinking, imagining, willing; and it must express thought and feeling, choice and determination, in language, conduct, and various forms of doing.

The recitation must arouse these activities. — The chief purposes of the recitation are attained when the pupil is so aroused by his contact with the teacher in class, that his mind will pleasurably function in these three ways, in its reaction upon the subject-matter presented; and when these operations are rightly tested.

The teaching acts — or "formal steps" — should conform to the order and method of the three mental operations, and to the aims of the recitation. This is true, whether the teaching is physical, intellectual, or moral; the same principles and laws underlie all kinds of teaching in all grades of advancement.

Teaching defined. — To teach is consciously *to instruct, to develop, to train,* and to test results.

To instruct is to give to the pupils facts, ideas, words, the materials of knowledge. Instruction, in this strict sense, is necessary chiefly in primary work; but it is best to lead even beginners to get, as far as possible, their facts for themselves.

To develop is to increase and direct the self-activity of the pupil, to vivify all his right interests and awaken new ones, thus making all his powers stronger.

To train is to cultivate the pupil's *skill*, his ability *to express* easily and well, and with economy of time and energy.

Each lesson usually affords opportunity for all three teaching acts. — All three teaching acts should, as a rule, take place in every recitation; but in some cases the necessities of the subject, or of the pupils, may require three or even more recitations to complete them all.

Even when the pupil has done well in preparing the lesson, in his acquisition of the facts and his understanding of their relations to one another and to other facts previously learned, there is need that the teacher should add information not found in the lesson (instructing); should illuminate it with knowledge already gained, and should make sure that the pupil can recognize familiar facts in new settings, and can fit new facts into their proper places among things already acquired (developing; stimulating assimilation). And the proof of success or failure on the part of the pupil and teacher is the pupil's power or inability *to express*.

Teaching acts in terms of learning acts. — Stated explicitly in terms of the *learning* acts, the teaching acts are: —

(1) Causing the formation of clear individual percepts and concepts; (2) causing the formation from these of correct general concepts and conclusions, together with a quickening and strengthening of motives; (3) causing an apt and skillful application of the knowledge and power thus gained to the demands of practical life, or to the increase of needful knowledge.

Rules of the Recitation

I. *The most effective work can be done with a class only when each member is attentive to the matter in hand.* It is only in the focus of consciousness that the mind's powers work to true advantage; so this focus must be upon the subject-matter of the lesson in order to get results that are worth while. Time spent in trying to teach an inattentive class is time thrown away. The sun's rays coming through a bit of windowpane will not set tinder on fire; the same rays, focused through a lens, will burn wood.

The first problem is the problem of attention. — The teacher's first practical class problem is the problem of attention. Any teacher has the whole attention of his pupils during the first two or three minutes the first time he stands before them. It is not much too hard a saying that it is his own fault if he ever loses it thereafter. And the secret for every class and for the whole school, for the whole term, is the same that works the spell for those first two or three minutes — *interest.* It is their interest in the new teacher, in his way of working, in his personal manner, in his handling of them, that holds their attention upon him in that first contact. His privilege it is to fan by every art that spark of curiosity into a consuming flame of desire to possess all that he can give them. *Interest* is the lens that focuses consciousness, that converges the mind's activities to the burning point. So the problem of attention is the problem of interest.

Fresh interest in each recitation. — One of the surest ways of securing, day after day, that all-desirable fresh interest of a class in each lesson exercise is to spend time and ingenuity upon devising variations in opening and conducting the recitation. That teacher is most successful in securing interested attention who — other things being equal — has his pupils thinking to themselves, or saying to one another, "I wonder how he will get at things this time," feeling sure all the while that something good and pleasurable will come to them from each exercise. The best work will be done only when the teacher comes before each class with a carefully thought-out lesson plan, and with a correct standard by which to measure the results of the recitation.

Begin with the unexpected. — Nothing is so tiresome as monotony, and when pupils know that each recitation will follow the "same old grind," they come dragging to class, and are indifferent to all parts of the exercise except the "marking." The teacher should make it a special point in his class method to begin often with the unexpected, even the apparently irrelevant, and by a few quick questions lead the pupils to see the relation between what he has just presented and the lesson before them. He must be ingenious in putting every important fact of the lesson in a light in which the pupils had not themselves seen it, so that its relations and applications not previously discovered by them will become clearly evident.

The air and bearing of the teacher while before his pupils should be such as would mark a naturally pleasurable hunt, by teacher and pupils together, for something both enjoyable and profitable; and if the teaching is right, every pupil will feel a genuine thrill of satisfaction when a new truth, or some new value of a familiar one, is discovered. But a class will not respond in this way to any exhibition of *sham* interest by the teacher;

he must feel a real and living enthusiasm in his work as a revealer of truth and beauty to his pupils, and must be genuinely expectant that they will feel a keen pleasure in the revelation.

The teacher may appear to be taught. — The effect is much enhanced if the teacher will sometimes quietly and naturally put himself in the attitude of being instructed by his class, and insist that some point in the lesson be made clear to him.

This is a frequent device of the skillful teacher, and, rightly used, it never fails to stimulate the pupils to clearer thought and more accurate expression; they feel the interest that quickens every one who has something worth telling to some one who wants to know it. This playing the *rôle* of learner is different from Socratic questioning. In the former, the pupil forgets for the time that the teacher knows more than himself; in the latter, the pupil is all the time aware that he is being led to see something by one who sees it better than he does.

It may be found profitable occasionally to allow the pupils to ask questions of the class. Sometimes the teacher may announce himself as a target at which they may fire any question concerning the lesson. One good result of this latter device is to show the pupils that it is not so easy after all "just to sit up and ask questions." Another and more valuable one is that it enables the teacher to get a new insight into the pupils' ideas of the lesson.

II. *The teacher should, as far as possible, dispense with both text-book and notes while conducting a recitation.*

Nothing should come between the teacher and his pupils. Having a text-book in hand and looking into it to see what questions to ask and to determine the correctness of the pupils' answers, is one of the surest means of destroying that magnetism which should be a characteristic of the contact of pupils and teacher during the recitation. Such use of the text-book distracts the attention of teacher and class from the best purposes of the recitation, and sets up a false standard of the worth of the pupils' answers — the standard of mere verbal accuracy in the repetition of the author's language.

The teacher must know the subject.— In order to dispense with the text-book the teacher *must know the subject*, and in addition to his general knowledge of it he must know it as the text-book presents it. He must feel so thoroughly at home in the subject that he will be free to give his alertest attention wholly to the pupils themselves, remembering always that it is *they* that are taught, not the *subject*.

The teacher must make his own questions. — The teacher must make his own questions, and not use *ready-made ones* of the book. A text-book that has such questions is an insult to the intelligence and a slur upon the competency of teachers. It is pleasant to note that very few modern texts transgress in this particular. The teacher can develop but little skill in the fine art of questioning, so long as he merely "hears lessons," with book in hand, even if it is one free from vicious cut-and-dried questions.

Dispensing with text-book and notes while conducting a recitation greatly strengthens the confidence of the pupils in the teacher; they soundly respect a knowledge and skill that can "hear a lesson without the book." They feel the faith that is always inspired by the evidence of capacity. Indeed, one of the best means the teacher has of gaining and holding easy control of a school is to show himself thoroughly acquainted with the branches he undertakes to teach; and one of the most impressive proofs that he can give his pupils that he is master of his subjects is *to teach without a book.*

It should be said, however, in this connection, that the inexperienced teacher must be on his guard, in casting free of the book, lest he be led by irrelevant questions or remote associations of thought to permit himself and the class to stray too far from the essentials of the lesson.

III. *The whole recitation should be conducted for the benefit of every member of the class.*

Each pupil responsible for every question. — A pupil's recitation must not be considered as merely a sort of private affair between him and the teacher. It is a matter of concern to every other member of the class. Each one should be made to feel that he secures a personal gain by attending to every question and the answer given to it.

After a pupil has recited, the teacher should first call upon the class for criticisms upon any inaccuracy or incompleteness, withholding his own comments until he has drawn all he can from the class. Thus every pupil will be brought to feel that he is responsible to the *class* — as its representative — as well as to the teacher, for the correctness and fullness of each answer he gives.

Blackboard work. — Not a few teachers viol
by permitting a pupil to explain his work
board to the teacher alone, or to the teac
fellow-pupils as may have finished their ow
board. Blackboard work, any

the benefit of the whole class; if it is not so done, there is no need of its being done at all.

To get the best results from board work, three things are necessary: (1) all such work must be so done as to be *self-explanatory;* (2) adequate explanation of his own work should be required of each pupil who has been sent to the board; (3) such explanation should be given only after all board work assigned has been completed and the whole class is ready to give attention.

The whole class responsible for an explanation. — Not only should the one who has placed work on the board be called on to give a full explanation, — to the *class*, *not* to the teacher, — but other members of the class should be vigorously and searchingly questioned as to the accuracy, clearness, and neatness of the work done.

Sometimes the teacher will find it expedient to interrupt, with questions, the pupil who is explaining at the board, not only to draw from him a fuller and clearer discussion, but to keep the class on the *qui vive* and make them see more than they would otherwise.

Pupils should stand to recite. — Guiding his practice by the principle that the recitation is for the benefit of the whole class, the teacher will insist that a pupil shall always *rise to recite.* Pupils can be brought to feel that it is a discourtesy to both teacher and classmates to recite sitting. It must be kept in mind that each pupil should recite as much to the *class* as to the teacher; hence, reciting should be done standing, so that the whole class may see and hear to the best advantage. A class is much like a parliamentary body, and, of course, in such bodies members rise to speak.

The pupil reciting is also benefited by the enforcement of this rule, for he is thereby drilled in self-possession, he learns to think and talk while on his feet, and the effort involved helps to fix in his mind the matter recited upon. The rule should be general and thoroughly enforced; *no pupil who is able to stand should be permitted to recite or to ask questions sitting.*

IV. *Teaching skill culminates in the art of questioning; the teacher's questions should serve all the ends of the recitation and of class control.*

Knowledge-testing questions. — Questions are the teacher's class tools, and each kind has its own special function. Questions intended to test knowledge — to discover the extent and kind of the pupils' acquisition of facts — contain the interrogatives "What?" "Who?" "When?" "Where?" or modifications of these.

To reach the will. — Questions designed to quicken the feelings and direct the will contain appeals to the personal likes and dislikes of the pupils, or to their sense of right. They help to cultivate the ability to put one's self in another's place, to see and feel from another's standpoint. For example, "How would you feel in that case?" "What made the boy act so, in the story?" "Which was the nobler deed?" "Why was that a cowardly thing to do?"

Questions for developing and testing. — Questions that are to test and develop thought-powers — observation, comparison, judgment, imagination — hinge upon "What kind?" "How many?" "How much?" "Why?" "How?" "What effect?" used in some form.

The following suggestions are in line with the rule given above (IV.).

Notes on Rule IV.

1. It is better, whenever possible, to *question* a pupil into apprehending a thing than *to tell* him directly.

This is true only when the pupil has some basis of knowledge from which to start. The dictum, that a pupil should not be told what he can find out for himself, can be followed only when the pupil is possessed of some elementary data to set out from in his search for more knowledge.

Socratic questioning. — The mode of questioning called the "Socratic" has for its primary function to lead the pupil step by step into clear and true apprehension of facts, and their right relations. It may be so used in any school exercise, from a primary object lesson to an investigation of a sociological problem.

The Socratic method begins just within the circle of the pupil's knowledge, and by proceeding no faster than the learner willingly goes and understands as he goes, gradually leads him to see clearly for himself what was before obscure or wrongly perceived.

Illustration. — The method is susceptible of many variations and modifications to suit the needs of the pupil, and the character of the subject. The following may be taken as a simple illustration: —

In spite of the teacher's explanation, John does not yet understand why division of fractions can be performed by inversion and multiplication. Instead of repeating the explanation, the teacher questions John, beginning just within his knowledge of the properties of fractions.

Teacher. John, write on the board $\frac{2}{3}$ to be divided by $\frac{1}{2}$. Now, why can't you divide the one by the other, just as they are?

John. They are not the same kind.

Teacher. What must be the condition of the fractions, then, before you can divide?

John. They must have the same denominator.

Teacher. What are they when reduced to a common denominator? Write them.

John. $\frac{4}{6}$ and $\frac{3}{6}$.

Teacher. If you divide $\frac{4}{6}$ by $\frac{3}{6}$ what is the quotient?

John is a little confused and cannot tell. The teacher has him express the fractions thus,—4 sixths ÷ by 3 sixths, and asks again what the quotient is. John sees it this time and answers correctly—$\frac{4}{3}$, or $1\frac{1}{3}$.

Teacher. What did you do, a while ago, to reduce the two fractions to the same name?

John. [*After some thinking and, perhaps, further questioning.*] I multiplied both terms of each fraction by the denominator of the other.

Teacher. Now multiply $\frac{2}{3}$ by the $\frac{1}{2}$ inverted. You see the result is the same as before—$\frac{4}{3}$. What did you multiply together?

John. I multiplied the numerator only of each fraction by the denominator of the other.

Teacher. What did you have in our first process of division, that you do not have in this?

John. I had two sixes for denominators, and one more step in the operation.

Teacher. What is the advantage of the latter process, then?

John. It saves the trouble of reducing to a common denominator.

Teacher. Why, then, do we invert and multiply in division of fractions?

John. Because we get the correct result more readily than by any other way.

Teacher. [*Clinching the idea.*] Yes, inverting and multiplying reduces the fractions to a common denominator, and sets the numerator of the dividend over the numerator of the divisor, all in one operation.

Any teacher will understand that such an illustration is largely theoretical; the answers are, of necessity, manufactured. In practice, the conversation between the teacher and John would probably be three or four times as long as given in the illustration, and in the course of it the teacher would doubtless discover that several things which he supposed John to be familiar with, John would seem never to have heard of. But the line of questioning must be persisted in, and John must be led to give understandingly the answers, in substance, as shown above. Even after all is done John's grasp of the matter may still be quite feeble; but it will be far stronger than it would be as the result of a mere repetition of an explanation by the teacher.

2. The teacher should frame his own questions.

This has been sufficiently adverted to already. Only by laying aside text-books and notes, and making his own questions in line with his definite prearranged lesson plan, can the teacher adjust his conduct of the recitation to the needs of the class, and make his work alive instead of mechanical.

3. The manner of the teacher in questioning should show alert interest, forceful personality, and complete possession of self and of the subject of the recitation.

4. Questions must not be haphazard, ill-digested, hesitating, or rambling. They must show a logical connection, a natural unfolding of the subject, that shall help the pupils to correlate and unify their knowledge of the lesson.

5. The business of the pupil in class is to *attend* and *think.*

Pupils should be independent and honest in their answers. — To aid in stimulating these activities, the teacher should surprise the inattentive pupil with an unexpected question, and should occasionally lay a question trap for the unthinking. Pupils are prone to say, in reply to a question, what they think the teacher *wants* them to say; and when, as is not infrequently the case, teachers betray, by a look or a tone or the form of the question, what they want said in reply, the pupil readily takes the cue. To break up this and lead pupils to make correctness, accuracy, and their own honest judgment the standards of an answer, rather than what they suppose the teacher to want said, it is allowable for the teacher occasionally and good-humoredly to lead such pupils on a wrong track, by look or tone or form of question, and so force them, for safety, back upon their own carefully considered thought.

Some pupils may go to the other extreme and be somewhat too independent of the book and of the teacher. But this is better than subserviency and unthinking acceptance of authority. The teacher should decide nothing *dogmatically* — not even a question of fact. A teacher's handling of a class should, of course, be positive and full of character without trenching on the divine right of a pupil to hold his own honestly thought-out opinion and to express it properly. Nothing is ever gained, and much is often lost, by a supercilious dogmatism that hardly permits a pupil to ask a respectful question, much less to express a judgment differing from the author's or the teacher's own.

Everything should be done to foster the habit of fear-less and thorough examination of facts and the honesty and accuracy of individual judgment that should characterize a free and self-reliant manhood and womanhood.

No pupil should know when he is to be questioned. — To secure attention from all members of the class, no pupil should know just when he is to be questioned. The teacher must keep accurate record of the number of formal recitations each pupil is called upon to make, and thus see to it that all are given equal opportunities; but he must so handle the class that no one will be able to foresee just when his "turn" is to come. As a rule, the question should be asked before a name is called. If the teacher says, "Mr. Smith, please give a brief account of the Mecklenburg Declaration of Independence," the other members of the class will relax attention as soon as they hear Mr. Smith's name called, and will thus lose the full force of the question, or will perhaps give it no attention at all. But if the teacher says, "Give a brief account, etc., Mr. Smith," each pupil, not knowing who is to answer, until the question is finished and a name called, gives attention and thinks of what he can say if his name is called. As an aid in securing attention the class should be made to understand that, except for unusual reasons, a question will not be repeated. To repeat questions is to cultivate lax attention.

6. As a rule, a question should be a clear, clean-cut, crisply uttered interrogative sentence, syntactically and rhetorically correct; and answers should be clear, explicit, and *affirmative*. Pupils, when in doubt, sometimes answer with a sentence affirmative in form, but with an interrogative inflection. Such answering is not *to be* tolerated. Prompt questioning and prompt answer-

ing should be the rule. The teacher should have his next question clearly formulated before the answer to his last one has been finished; and the pupil either knows or does not know, and he should quickly show knowledge or confess ignorance. Too often much time and energy are allowed to leak out through the gap between the end of an answer and the beginning of the next question.

Kinds of questions to avoid. — Categorical questions, requiring only yes or no for answers; *elliptical* questions — really answers with the chief words omitted, the pupils being expected to supply them; and all questions that *suggest the answers*, — should be carefully avoided. No teacher should be guilty of such monstrosities as "Did the South win in the battle of Bull Run?" (categorical); "The singular number denotes ——?" (elliptical); "To find a third of a number you divide it by three, don't you?" (suggestive).

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[illegible]

Parliamentary usage in class. — 7. A recitation should be conducted in general conformity with simple parliamentary usage. The teacher is the presiding officer, and through him the business of the class should be carried on. If a pupil desires to ask a question, to offer a criticism, or to show his readiness to answer some question, he should raise his hand and secure the "recognition of the chair" before saying anything. "Talking out" in class, for any purpose, without such recognition should not be permitted even in primary grades.

Conversational style in the recitation. — This rule need not, however, prevent the freest and pleasantest use of the conversational style in the recitation, with even the cracking of an occasional joke — if it be clean and genuine. The teacher of true dignity rarely needs to call attention to his position; he can be formal without being stiff, and can unbend into easy colloquial friendliness and humor without becoming familiar or patronizing.

In the recitation, as at all other points of contact between teacher and pupils, the teacher's demeanor should be one of unfailing courtesy; in this he should be a model. And courtesy is something to insist on between pupil and pupil. The too common offense of thoughtlessly laughing at the crude and ignorant answer of some timid or dull pupil should not be tolerated.

8. The success of the recitation must be measured by what the *average* pupils get from the lesson.

Most effort should be spent on the slow learners. — The tendency of any teacher, and especially the beginner, is to shape his work to fit the capacity of the brighter and more responsive and appreciative pupils. Consequently, much that is done goes over the heads of the dull and the average.

But if he makes sure that the dull pupils get a tolerably firm grasp of the facts and receive some effective thought stimulus, so that they can go to their next work with interest quickened and power strengthened even by a little, then he may be confident that the lesson has been made plain to average minds and those above the average.

Explanations to the slow may grow tedious to the quick-minded. — However, it requires some care to keep the brighter students from losing interest while matters are being made plain to the slower thinkers. The quicker intelligences have a right to their full share of attention. A skillful teacher will draw explanations, criticisms, and simplified statements from them that will make matters plain to the slower minds, and at the same time serve to secure the interested attention and the coöperative activity of those who, having readily grasped all the points themselves, would grow listless under the teacher's detailed and reiterated explanations to the backward ones.

The teacher needs to exercise a high degree of skill and care to preserve a just balance between the two extremes met with in every class — those who get through their work rather too easily, and those whose consciousness of weakness or lack of advancement discourages their best effort. But his reward is his success in holding all to unflagging effort — revealing loftier heights that challenge the most strenuous endeavor of the strong, planting in the weak hopes which they may justly expect to realize.

CHAPTER VI

DRILLS; REVIEWS; EXAMINATIONS

Modified forms of the recitation. — Drills, reviews, and examinations are modified forms of the recitation. They have definite purposes and their own methodology.

DRILLS

Drill may be made to serve all the ends of teaching; it fixes instruction, making knowledge permanent; it develops power; it cultivates skill. The word "drill" sums up all that is meant by *repetition* and *practice*. In teaching, as in military tactics, *drilling* means having certain movements of muscle or of mind, or of both working together, done over and over again, until action becomes automatic.

The end of drill is automatic action. — A primary class is drilled on the multiplication table — which means the pupils repeat and re-repeat what has been learned, and apply it again and again, until the association of two factors with their product becomes *automatic*, and the knowledge is permanently possessed.

Another class is drilled on the chief periods of American history, with the characterizing events and "boundary dates" of each; another, on the chemical symbols; another on the binomial formula. In all these cases, and in others like them, the object of the drill is *to fix knowledge*, to make something a permanent possession of memory.

When a class is given problems not found in the text, and differing more or less in form of statement, but all based on a common principle, the purpose is drill to secure quick recognition of known relations under new forms and conditions. Judgment is both developed and trained — it grows both stronger and readier.

When pupils are *timed* on the correct addition of a column of figures, or on a penmanship exercise, or on accuracy and rapidity of some manipulative work, the specific object is *skill* — they are being *trained* by drill.

Drill is usable in every school exercise. — There should be drill in everything which is to be used as an *instrument* in the further acquirement of knowledge or in the increase of power or skill. Certain activities are to be drilled into the senses, some into the memory, some into the muscles, — in short, all the faculties of body and mind are to be exercised in drill, each in turn or all together. Every exercise of the school furnishes material for drill, for every gain of real value a pupil makes may be used as a means or instrument in making further and greater gains.

Drilling to cultivate senses and memory. — All pupils, but especially those in primary grades, should be drilled in *observation*, in taking note of all their surroundings through all the senses, especially the eye and ear. Nature-study — genuine, out-door nature-study — offers inexhaustible opportunities and invitations to exercise the senses.

There are certain facts in every branch of study, and in every employment, that must be laid hold of by the verbal memory, and held with unyielding grip. Among these may be specifically named the tables in arithmetic, the fundamental definitions and rules of arithmetic and grammar (provided, of course, the pupils have inductively derived these for themselves), formulas in algebra, axioms in geometry, the nuclear dates in history, and the technicalities and routine work in any business. The teacher must not stop short of securing an instant and accurate recollection by his pupils of these things whenever and wherever they may be called for.

Drilling to secure quickness and accuracy of doing. — The fundamental processes in various branches, especially in mathematics and subjects that involve mathematics, must also be so drilled upon that they will be performed automatically. No rapid or effective progress can be made in any subject until the student is able to use the symbols, forms, and processes peculiar to that subject, easily, freely, *automatically*. A pupil cannot make rapid progress in arithmetic until he can use the fundamental operations correctly and rapidly as instruments. He can make no satisfactory advancement in algebra until he has at his fingers' ends at least the elementary symbolism of algebra and the processes of factoring.

No enjoyment can accrue to a pupil from reading, until he can rapidly recognize the printed words as familiar expressions of thought. He cannot express his own thought in writing with any facility until he has mastered the mere *mechanics* of composition — spelling, capitalization, punctuation, and paragraphing.

METHODS OF DRILL

Drill must arouse interest. — The rule of first importance in drilling is that the *interested consciousness* of the pupils must be evoked throughout the exercise; mere dull monotony of repetition is not drill. .Gain in power and skill is made in the same degree in which — to use Matthew Arnold's fine phrase — *consciousness permeates the work.*

"Thoroughness." — It is in violation of this rule that pedagogical crimes are committed in the name of "thoroughness." To have the pupils thresh over the old straw of their learning is not to secure thoroughness. The strong distaste for some studies or portions of subjects that results from such work seems to close the pores of the mind, so to speak, and thus effectually prevents such a "soaking in" of the matter as is essential to true thoroughness. Drill must be stimulative, not deadening.

Drill must be by use. — Another rule, too often violated, is that drill should be given, for the most part, through *practical use.* For example, drill in the multiplication table should be mainly in the solving of simple problems in which multiplication is required; drill in finding the L.C.M. or G.C.D. should not be in the handling of mere number abstractions, but in the doing of simple work in which finding the L.C.M. or G.C.D. is not an end in itself, but a means to some further end.

It was not so long ago that children were taught to write by having them practice copies of "pothooks" — up curves and down curves and slants. Good teaching wastes no time in such futilities, but puts the learner at work to form *words,* words that are familiar from having just been used in the reading lesson.

Nobody would be guilty of trying to train a boy to use a hatchet by having him practice various strokes in the air! He is put to *cutting* something, to *making* something that can be used, if only for kindling.

Drill must be adapted to both subject-matter and pupil. — Although drill consists essentially in *repetition*, the value of the results depends greatly on the adaptation of the repetition to subject-matter and to pupils.

If the senses are to be trained to quick and accurate observation of a wide range of phenomena, the drill must be one of constant *impression* through sense perception of objective facts.

If the memory is to be drilled into power to grasp and hold words, symbols, forms, just as they are, then the drill is one of repeated impressions, each *identical with the others*.

If the elaborative faculties are to be developed and trained, the work to that end is in repetition of *activities* and *processes*, instead of repetition of impressions. For example, in drilling upon division of fractions, it is the *process* that should be repeated, each time with different quantities.

Individual drill. — In adapting drill to different pupils, the peculiar need of each is first to be determined. One may need special training in *visual* observation and visual memory; another, in orderliness; another, in self-control; another, in ease of oral or written expression. To reach these needs requires *individual* drilling — the practicing of each individual in that in which he most lacks power and facility.

This individual work can be done in class, and should be done there, mainly, in order both to save time and to give the pupil the fullest benefit of the class magnetism.

Some illustrations and suggestions are given below, indicating how each pupil may be helped to what he needs, and at the same time the class be drilled as a whole.

Drill illustrated.—In United States history it may be desirable to drill the whole class on the first epoch, with its periods, and, while so doing, to help Henry in the matter of dates, which he finds it particularly difficult to fix and retain. The teacher, remembering that the more *associations* any fact has, the easier it is recalled, puts on the board an outline of the first epoch of American history, thus:[1]—

(Epochs) 1^1 Colonization, 1000–1776.

(Periods)
- 1^2 Exploration and Discovery—from the voyage of Ericson, 1000, to the voyage of La Salle, 1682.
- 2^2 Settlement—from Raleigh's colony, 1585, to the settlement of Georgia, 1733.
- 3^2 Consolidation—from the "Stamp Act" Congress, 1765, to the Declaration of Independence, 1776.

He first calls upon some clear-minded member of the class to read this outline through, aloud. Then, standing before the class, the teacher calls on John to read rapidly and in order the names of the epoch and its included periods, and has Henry, who is weak in dates, stand at the same time and read the "boundary dates" as the epoch and periods are named.

Then another pupil is called to name the *events* that bound the periods, while Henry gives the corresponding dates again. The drill is continued in this way for a while, different pupils being called on to name the epoch, periods, and events, sometimes in forward order, sometimes in reverse order, sometimes irregularly, while Henry is kept steadily on the dates. So far the pupils have been permitted to read from the board if they chose, although encouraged to depend on memory; but now the outline is erased, and Henry is required to give the dates in order, while the class respond in *concert*, with the epoch, periods, and events. Finally, Henry is asked to give the whole outline, dates and all.

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[1] This outline and the illustrated drill are based on the work of Dr. R. H. Holbrook.

Class drills. — At another time there may be a class drill, either on this or some other epoch of American history, in which the teacher calls on one pupil to give the outline or a part of it, and what he gives — if correct — is immediately given by the class in concert.

The individual drill and the class drill may be combined. They may be varied, separately or together, in numberless ways that the ingenuity of the teacher and the necessities of his work must suggest. Enough has been given to show one way of using the drill; it can be readily and effectively used in the same way in any subject which makes demands on the *verbal memory*.

Drilling the reflective activities. — In drilling on arithmetical processes or others involving the exercise of the reflective activities, the method will be somewhat different. Here, memory of facts, ready perception of numerical relations, and quickness and accuracy of work, are the objects of the drill.

In elementary percentage, for example, after the pupils have had some experience with the different cases, — in which, it is to be hoped, the teacher has not used the formulas, but has made the class acquainted, instead, with the "100%" analysis, or some other, — it is desirable to drill upon quick recognition of any case, and ready and intelligent application of the analysis. For this purpose the teacher has at hand a number of practical problems, taken from sources other than the textbook in use, and illustrating all the cases. Two or three problems under each case should be written on the blackboard and numbered, but not in the order of the cases, thus:—

(1) A man paid $160 for a horse, and, after keeping him a month, sold him for $192. Not counting the expense of the horse's keep or the value of his service for the month, what per cent did the man make?
(2) One rainy day only 16 children came to Room 10, School No. 5. That number was just 40% of the regular enrollment for that room; what was the regular enrollment?
(3) A workman's wages were $40 per month. It became necessary for his employers to reduce wages 15%; how much did this man get under the new scale?
(4) A farmer sold his wheat in 1897 for $1.04 per bushel, which was 60% more than he got in 1896; what did he receive per bushel in 1896?
(5) A rôll of carpet, sold at auction, brought $1.60 per yard, which was 20% less than cost; what did the carpet cost per yard?

Teacher. What is the base in problem one, John?
John. One hundred and sixty dollars.
Teacher. What is the base in problem three, Henry?
Henry. Forty dollars.
Teacher. What is the base in two, Sarah?
Sarah. The enrollment, which is to be found.

The drill continues in this way with suitable variations, questions upon the "sense" of the problems, etc., until any term is instantly recognized by the pupils. Then the teacher says quickly, "Jane and David may go to the board. Jane may apply the hundred per cent analysis to problem two; David, to problem four. The others will look on and note errors. The time limit is three minutes. Ready — work!"

The drill must never drag. — These illustrations may serve to suggest something of the method of the drill. The point the teacher must not forget is, that the object of the drill is *true thoroughness* — ready and reliable remembering, prompt judging, quick and accurate saying and doing. To secure these the drill must never be permitted *to drag;* there must be, throughout, unflagging interest, unhesitating quickness, and sustained good humor. These essentials will mark the drill if the teacher shows such *perfect mastery* of the subjects and of his methods as to make his thinking and his questioning in drill appear almost *automatic*, and if he is careful to *vary* the exercise.

The teacher's questions must be clear, concise, tersely put, pricking the unwary and inattentive, stimulating the alert, rousing all to a high pitch of effort. The drill at its best waits for no pupil to patch an answer together, has no "nexts," allows no repeating of questions; it swings along with a rush and *verve* that quicken the blood and make the brain cells tingle. Teacher and pupils come out of such a drill as out of a romp on a crisp day — refreshed, glowing, tonicized.

REVIEWS

Differences between drills and reviews. — The primary object of the drill is to bring about thoroughness; the primary object of the review is *to test* thoroughness. A drill may be upon either new matter or old; a review is necessarily on what has been passed over. The drill reënforces any one or all of the processes of teaching;

the review reveals the permanency of results, both of regular teaching and of drill.

The review shows the pupils' weaknesses and strength, their gains and deficiencies, to the teacher and to themselves. Its peculiar value lies in its effectiveness as a means of showing the teacher what parts of the subject and what processes of his work need more attention.

The purpose of reviewing is not to prepare pupils for examinations. — Reviewing should never be prostituted to the exclusive use of getting pupils ready for examination, as is often done. Of course, all rightly planned reviews will aid in preparing for examinations, if there are to be any; but "the examination" should never be set up as the end and aim of reviewing. On the contrary, everything — even the examination, if possible — should be made to illustrate the value and desirability of knowledge for its own sake and for its good uses.

Reviews should be frequent. — When reviews are freed from any function in the examination machinery, they will naturally be distributed throughout the term and held frequently, instead of being crowded together near the close of the year or half-year, and thus perverted from their right use to that of a "stuffing machine."

Should not be "set." — Reviews should not, as a rule, occur at fixed times; it is not best to have one in each branch once a month, as is sometimes done, regardless of the requirements of the pupil or the subject. A review is more effective when it is somewhat unexpected by the pupils, because it is then a truer test of their real possessions and power than when it follows a period of hurried and nervous preparation for the specific purpose of meeting a test.

Reviews may be used to save time. — It is best t review after some definite portion of a subject or all of it has been finished. For example, in physiology, soon after digestion has been studied through, some day, instead of discussing the lesson assigned, the teacher will, without any preliminaries, carry the class through a rapid oral or written review of digestion. Sometimes there are a few minutes of a period left after the regular recitation is finished, and the teacher, instead of dismissing the class and wasting the time, orders out "scratch-books and pencils," and has answers written to ten short, sharp questions covering some matter the pupils had almost forgotten having studied. Or when the lesson is of such a character that some of the pupils work at the board and others remain at their seats, it is an excellent plan to have the latter restate quickly the principles and processes of the work being done by the others. In such a case, in addition to the value of the review, there is also the advantage of keeping one section of the class from idling while waiting for the other section to prepare board work.

A subject may be reviewed after it has been laid aside. — There is no reason why the reviewing of a particular subject should be limited to the time during which that subject is studied. It is well to have an occasional "going over" in a subject after it has been completed in regular course. The natural interrelation of subjects will necessarily occasion some reviewing of each in the study of others. For example, geography will naturally be reviewed in history, history in civics, algebra in the higher mathematics. But more than this is meant by the suggestion made above; a definite, direct review of some part of history should be made occasionally by the class in civics, of arithmetic by the class in algebra, of grammar by the class in rhetoric. Such work will have a very wholesome effect in showing a pupil, among other things, that when he "finished" a subject it should have been finished only as a tool with which to do higher and more efficient work. Such an occasional fishing up of things that have nearly sunk into the subliminal consciousness — as much school work does, soon after it is done — will do much good.

Reviews should be varied. — Reviews should, like every other school exercise, be varied. In any given subject the review may be at one time on facts, at another on principles, at another on processes; or it may be so handled as to show the interdependence of facts, principles, and processes. The teacher who studies his work and keeps in mind the value of *interest*, will devise in his reviews some odd or unexpected turn that will throw a flash light on what he wants photographed by memory.

Reviews should show logical sequence. — Each review should be made to cover some definite logical part of a subject, so that the pupils may, while being tested, get, at the same time, a clearer apprehension of the order of arrangement of the subordinate topics and their relation to the main divisions of the branch. A well-planned review sets things in true perspective, putting the larger values in plainer view and ranging the lesser ones in the background. A pupil will often come out of such an exercise knowing more than when he went in, and with a better understanding of what he did know.

Subjects should be outlined. — In advanced classes, when any subject is first begun, the entire subject, or some definite and considerable part of it, should be presented in outline as a lesson-whole; and successiv lessons should develop each outline in more or less detail, according to the grade of the class. Then every review should be made to aid in fixing these outlines clearly and permanently in the mind of each pupil. From time to time, portions of the outlines of different subjects should be reproduced by the pupils, entirely without notes and either from memory or by logical development from point to point. And as a part of every final review the whole class should give a condensed outline, or topical classification, of all the matter under review.

Not only should each review show the close relation and interdependence of the parts of a subject within the limits of that review, but should also be related to other reviews made in the same subject. By such careful and constant interlocking of topic with topic, of subject with subject, the learning mind can be brought to see and enjoy the oneness of all knowledge.

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EXAMINATIONS

Examinations more a question in management than in method. — A full treatment of examinations belongs in educational management rather than in educational method. It is a live question now, and promises to be for some time, whether examinations, in the commonly accepted meaning of the term, should have a place in school administration. Assuming, however, that they will continue, for a while at least, to form a more or less prominent part of the routine work of most schools, a few suggestions are offered here as to how the best results may be secured from them.

The purpose of an examination. — The usual purpose of a set examination is to aid in determining the fitness of the one examined, either to continue in the work he is now doing, to lay it aside as completed in the school course, or to undertake other and more difficult work. The examination should not be used otherwise than as only one of the means of finding out whether a pupil is ready for the next forward step. Even so used it is liable to great abuse, and in any but skillful hands is a rather lame device, attended by many well-recognized evils.

How inherent evils of the examination may be alleviated. — To alleviate these evils, less importance should be attached to examinations as usually conducted, and great care should be taken to make them fair. The first suggestion is really included in the second, for it is not fair to base an estimate of the pupils' fitness upon an examination alone. The pupils' daily work, especially their growth in that work, and the results of reviews should count for more than set examinations.

Also, in order to be fair, an examination should test not merely the work of memory, but the work of all the other powers that have been under cultivation. That a pupil should remember all the facts he has met with in any study is of less importance than that he should have drawn strength and skill from his handling of them, and should be able readily to discover for himself other facts and weigh their values.

The conditions of examination should be natural. — Examinations should be of a sort to test the pupils under conditions that will leave them natural and unconstrained. What is meant is illustrated by a most pleasing incident, related as having occurred a while ago at an English university. A young woman, who had come up for an examination in some department in natural history, was in great dread of the ordeal, and had she been put through a formal examination would surely have failed, though her class record was very high. The examiner, a non-resident professor, who was to test the applicants in this branch, hearing of her nervousness, secured an introduction before the hour for work arrived, and took her for a walk through the Museum of Natural History. They talked freely and naturally, with much mutual enjoyment, upon the young woman's specialty, illustrating the discussion by frequent references to the specimens around them. At the end of a half-hour, the professor amazed and delighted the student by telling her she had passed a very brilliant examination. Although such conditions are not often possible, yet the incident shows the lines along which the ideal may be approached.

Many questions not necessary. — That examination would be fair and rational in which the pupil could show his knowledge, power, and skill by *applying* them to the mastery of some piece of work which would involve them all, but which had never been set him to do before. A reliable and just test of a pupil's ability to enter the second reader would be his success in reading a page or two at the first of that book. To determine whether a pupil may lay aside arithmetic he should be asked to solve two or three practical problems which he has never seen before, but which involve principles and processes which he ought to be familiar with and able to apply readily. It is by no means necessary to have "ten" or any other definite number of questions asked or problems solved in an examination. A pupil's success or failure with one question can reveal as much as his ready or blundering handling of a dozen.

To test a student's competence to continue his work in chemistry by himself, it should suffice to set him to the qualitative and quantitative determination of some typical compound with which he had had no previous acquaintance. The reading at sight of a page or two of new matter in Cicero or Sophocles would be a better test of fitness in the classics than the reading of fifty that had been gone over.

Doing a better test than telling. — And so in all technological and professional subjects, the emphasis of the examination should be placed on what the students *can do* — on how steadily and resourcefully they can meet new conditions — rather than on their telling or writing what they *would do* under those conditions.

Somewhat may be done to relieve the over-strain that usually marks an examination, and to make the conditions usual and natural, by having the test in each branch extend through several days, but occupy daily only the length of time devoted to the regular recitation.

In many branches, normal conditions — conditions under which a student's knowledge and capacity will be tested in practical life outside the school or college — will be further secured by making the examination partly oral, partly written. Each kind of work is a relief from the other, and both forms of expression are required in ordinary affairs.

Finally, that the greatest benefit may accrue to each pupil from an examination, whether he fails or passes, the work, after being estimated, should be fully discussed by the teacher with the class, and the value of the answers clearly shown.

In some such ways as these it is believed that the evils and absurdities of the "examination grind" can be much relieved.

CHAPTER VII

RELATIVE VALUES OF SCHOOL STUDIES AND EXERCISES[1]

PSYCHOLOGY teaches that the operations of the mind are *acquisition, assimilation, reproduction.* In any scheme of formal education, the courses of study and the several branches should be planned and selected with a view to securing the fullest development along all these lines of activity.

Curriculum making a subject in management. — A full discussion of what studies should find place in an ideal scheme and in what order they should come, belongs in management rather than in methodology. It is intended here to take the principal and typical subjects that are common to school curricula as they now exist, and discuss briefly their relative values as acquisitional, assimilational, and expressional, preliminary to a treatment of the methodology of each.

No hard-and-fast classification possible. — It is to be clearly understood, however, that in this classification no exact and rigid partitioning off of school exercises, according to psychological value, is possible. Each branch of study calls into activity, to a greater or less extent, every operation of the mind. Not only is this true, but every lesson also, rightly managed, provokes all three phases of the mind's activity. The purpose is to group school exercises and studies under one or the other head, according as their value is *chiefly* acquisitional, assimilational, or expressional.

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[1] See also page 258, Roark's "Psychology in Education."

ACQUISITIONAL STUDIES

The child spends the early years of his life in acquiring a *sense* knowledge of his environment — in learning *things*, their names, forms, colors, odors, textures, and their uses. Often, of course, even in the earliest years, efforts to discover the *why* and *how*, as well as the *what*, of his surroundings, are frequent; but the stream of sense-activity is little more than rippled, in the first seven or eight years of life, by voluntary and deliberate reflection.

Acquisition must continue actively, in school. — Up to the time when he enters school, he is chiefly occupied in laying up stores of concrete knowledge, and he should continue to be largely so occupied, under intelligent direction from his teacher, for several years after school life begins. This does not mean that he should stop, or can stop, such acquisition at the age of fourteen or fifteen, but simply that during his earlier years he should be, while the brain is most plastic, intensely active in acquiring a first-hand knowledge of *things*, the facts of existence.

Acquisition defined. — The term "acquisition," in popular, untechnical speech, is usually made to include more than is meant by it here. Nor can the content of the term be rigidly restricted. It comes near enough to say that, as here used, "acquisition" is the operation that involves the activity of the *senses* and *memory*, and of *judgment* in its elementary functions of forming *concrete concepts*.

Acquisitional exercises. — The earlier school exercises that are chiefly acquisitional are object lessons (includi nature-study), reading, spelling, oral lessons in geography, elementary history and biography, elementary civics, and physiology. And it will be borne in mind that at the *beginnings* of every subject are facts and terms — such as the paradigms in grammar, the tables in arithmetic, etc. — that must be learned outright, by main force of memory. But the exercises just enumerated are especially and, with the exception of nature-study, almost wholly, acquisitional.

Object lessons. — The term "object lessons," although in recent years it has become somewhat depreciated as a piece of pedagogical currency, is preferred to "nature-study," both because it includes more and because it more nearly names the kind of acquisitive activity that occupies the child before he enters school, and that should continue to occupy him for some time after entering.

The purposes of object lessons are to cultivate observation, — the function of all the senses taken separately and collectively, — to store the memory with concept-material, and to quicken the concept-forming power of judgment.

Reading and spelling. — Reading, nearly up to where it should merge into a study of literature as literature, is almost wholly a matter of quick visual perception and memory of word-forms. Later, it becomes a most potent instrument in all forms of acquisition.

Spelling is purely an operation of perception and memory; it is acquisitional wholly, and involves neither assimilation, nor — in any real sense — expression.

Oral lessons in geography, etc. — The design of oral lessons in geography, history, civics, and physiology is to store the mind of the learner, through sense and memory or through memory alone, with the primary and essential facts of these subjects. But little deliberate effort need be made, in these oral lessons, to quicken the reflective powers.

Technical terms. — In every subject, the terms that are technical and the facts upon which the subject rests fundamentally must be stored away as so much *material acquired.*

ASSIMILATIONAL STUDIES

By the "assimilative faculties" is sometimes meant the *reflective* power only; a truer meaning of the term includes also the imagination and the will — all the faculties by which we make over what comes into consciousness, and build it in as a part of ourselves.

The school exercises and studies that are especially suited to developing the assimilative powers are nature-study (natural science in all its forms and throughout its most extensive reach), arithmetic and all other mathematics, technical grammar, advanced history, and civics (sociology), for the reflective faculty; geography, history, and literature, for the imagination; and literature, biography, and history, for the motives and will. The great value of nature-study and literature in cultivating the æsthetic taste must not be lost sight of. In this, also, they are assimilational.

Nature-study, mathematics, grammar. — The phase of nature-study that emphasizes the *why* and *how* demands thought activity and cultivates the judgment — the reflective faculty. So, also, to a less degree, does mathematics; and technical grammar is elementa logic, and should be so taught to get its best value.

History and civics. — History, and civics all the way up into sociology, are, in advanced classes, powerful stimulators of the reflective power — they are full of "whys" and "hows."

Imagination in geography, history, and literature. — Every study involves imagination more or less; but those that cannot be taught to advantage without calling it into activity are geography, history, and literature.

Places, persons, events must be *pictured*, and the play of emotion must be felt through the power of imagination, if these studies are to have any real content for the pupils. And biography, history and literature are the subjects from which the teacher may draw most for the quickening of motives and the strengthening of will.

EXPRESSIONAL STUDIES

Reproduction is the third operation of the mind, and includes the processes of creation and expression, the making of thought and the uttering of it, in one form or another. The creative powers are fed and stimulated by all studies; *expression* is specifically cultivated by but a few.

Three forms of expression. — As there are three kinds of education, — physical, intellectual, moral, — so there are three corresponding forms of expression that should result from right training; and as the three kinds of education are interrelated, so, of necessity, are the three forms of expression.

Physical expression. — Physical expression may indicate both bodily and mental conditions. Good health and buoyant spirits, or their opposites, are plainly expressed in the physical bearing; so, also, are crudeness or culture, awkwardness or grace.

Intellectual and emotional expression. — Intellectual and emotional expression usually takes the forms of language, literature, and art. But there is a group of impulses which, almost from the earliest years of a child's life, seek expression through *motor activities.* At first these impulses seem to be mainly physical, but later they are emotional, or both. Like all impulses, they need direction, and it is due to a recognition of their value to the individual and to the community that manual training and industrial education are finding a place in many schools. Language may mean what is usually understood by that term, and may also mean any symbolism, oral or graphic, by which thought and feeling are communicated. Thus, there is a mathematical language of terms, signs, and formulas; a chemical language of symbols, weights, and equations.

Language, in its highest form and with the elements of force or beauty, or both, added, becomes literature, by which are expressed not only man's loftiest thought and deepest feeling but every intermediate shade of intellect and emotion.

Thought and feeling find expression also in all the forms of art. The painter, the sculptor, and the musician interpret to us the order and the beauty of the world. They utter themselves in marble or bronze, in color or sound, as truly as the writer or orator utters himself in living words. Not only in the work of the artist and the writer do human thought and human emotion find expression, but in the creation of the skilled artisan also. A perfect machine, a graceful piece of furniture, any work done by trained hands, is an expression of intellectual effort and æsthetic feeling.

Moral expression. — But the highest and most important expression of the self, the inner life, is the manifestation of sterling character through righteous conduct. The altruistic feelings are the latest to develop, in the individual as in the race. That is the deepest and fullest life in which they have the strongest and most effective expression; and such a life is the fruit of the highest civilization and the best teaching.

Expressional studies and exercises, then, are those that are concerned with the arts of speaking, writing, drawing, and modeling (extended to include painting and sculpture), music, and all forms of concrete doing, and with causing ethical feeling to complete itself in expression through manners and conduct.

Speaking, writing, and behaving demand most attention. — It is neither possible nor expedient for schools not specifically professional or technical, to attempt thoroughness and completeness in any of these except *speaking*, *writing*, and *behaving*.

The *elements* of other arts should also be well taught in the schools; but no teaching should be considered well done, unless the pupils can at last express their thoughts and feelings, clearly and correctly, in oral and written language, and have formed habits of right living.

The exercises and studies most useful in bringing these things to pass, are language lessons, composition, literary analysis, and forensics, for intellectual-emotional expression; and good literature, biography, and history for moral-emotional expression.

CHAPTER VIII

READING

In teaching reading there are just two ends to be sought: (1) to make the learner automatic and quick in the recognition of word and letter forms and values; (2) to secure his interest in the *content*, the spiritual element, of the printed forms. Under the first is included the *mechanics* of reading — distinct and clear articulation and correct pronunciation, as well as skill in instant interpretation of words and letters. In the second is involved the character-growth of the learner, his introduction to an enjoyment of truth, goodness, beauty, as seen by others and expressed by them in the world's literature.

Both aims to be kept in view in primary work. — Both these aims must be kept steadily in view by the primary teacher; for, although the pupil's ability to recognize, promptly and accurately, printed and written words, is the main thing to secure at first, yet at the same time this recognition is greatly facilitated by the feeling of interest aroused by the *content* of the words. Learning to read cannot, therefore, be a purely mechanical process, even in the first lesson; if it were, then any arrangement of words would serve, in first exercises, without reference to the sense or nonsense expressed. But it is becoming more and more clear that from the *very begining* the words used to make a reading exercise learners must express thought of interest to them.

The point where the drilling in mechanical or automatic recognition of words may cease, and the whole attention be given to the spiritual element — the content — in reading, marks the division between primary and advanced work.

PRIMARY READING

Ear-vocabulary and eye-vocabulary. — The two ends of primary reading — the mechanical and spiritual — are both reached by the best method of enabling the child to convert his *ear-vocabulary* into an *eye-vocabulary*, — that is, the best method by which the learner may come to see in printed and written words the same meanings that these words carry when spoken.

When the pupil enters school at six years of age, he already has a vocabulary, which he understands and uses freely, of from five hundred to one thousand words — depending on his home environment. But these words he recognizes only through the *ear*, as they are spoken, and they constitute, therefore, an ear-vocabulary. The first aim of the teacher is to enable the child quickly and accurately to get the meaning of these words through the *eye*. This fundamental and essential aim seems sometimes to be lost sight of, even when the right ways of reaching it are used.

Synthetic and analytic processes. — The usual processes of teaching primary reading are either synthetic or analytic. If the principles announced in Chapter III. are true, it should be plain that time spent in attempting to bring the pupil into the new world of reading along the synthetic road alone, must result in great confusion and loss of time. But along that road, until comparatively late years, almost all teachers tried to lead their pupils.

The phonic method. — The synthetic method has two forms, — one the old a, b, c grind; the other the phonic method. The latter is the better of the two, because it teaches the *sounds* of the letters — their vocal values, and thus enables a well-drilled pupil to pronounce, with considerable readiness, as soon as he sees them, written or printed words which he has not before seen. The a, b, c method teaches merely the *names* of the letters, and leaves the learner to get the different sounds by any lucky chance he can.

The a, b, c method. — It would be a waste of space to discuss the teaching of the alphabet as a way of teaching reading, except as a matter of pedagogical history, were it not for the regrettable fact that there are teachers who do not attempt to use any other.

Briefly, the a, b, c method begins by teaching the child his "letters," and after he learns them so that he can name any of them at sight, he is drilled upon spelling combinations of them in syllables, as a-b, ab; u-b, ub; etc.! When this sort of thing has gone on for some time, the learner is supposed to be able to spell monosyllabic words, such as *cat, rat, bat,* — and the next step after that is to read!

It is painful to have to confess that this archaic process is still used in many places. It should take but a glance to see that it is uninteresting, unnatural, and wasteful of time and energy. No wonder that pitiful thousands have grown up without ever coming into their rightful heritage of enjoyment of good reading, when they had to travel toward it along so tortuous and torturing a path.

Uninteresting. — The method is uninteresting because there is nothing in a letter, a mere symbol, to touch a child's experience and so to quicken his curiosity. The letters are meaningless to him, they have no content, and carry no idea.

Unnatural. — The method is unnatural, — generically, because the child's natural processes are analytic; specifically, because no child ever learned to talk by naming his "letters" first, and reading aloud is simply *talking from the printed page.*

Wasteful. — Finally it is a waste of time and energy, — of time, because in the time used in learning the alphabet and to drawl dully the spelling of senseless syllables and disconnected words the child could learn to read; of energy, because whatever the child is forced to do without interest dissipates energy. And, as a matter of fact, the pupil does not, after all, learn *to read,* by the alphabet plan. For example, when he has *named* the letters c-a-t, in that order, he cannot, unaided, pronounce the combination, for there is nothing in the names of the letters that could possibly suggest what the word's vocal value is.

The same objections hold against the phonic method. — The more modern synthetic plan teaches the *sounds* of the letters first, instead of their names, and drills the learner on the sounds and their symbols until he can readily pronounce familiar words. But the same objections apply to this as to the a, b, c method, and with nearly equal force, although the phonic method has the marked advantage that it can be made quite interesting. The fundamental objection to both these methods is that they are *synthetic.* Unless the teaching be very skillful, the child taught by either plan will be apt to do but little more, during the first year, than half call, half spell the words in his primer — and that is not only not reading, but makes learning to read more difficult than it would otherwise be.

The analytic method has two forms. — Of the analytic method there are also two forms, usually called the *sentence* method and the *word* method. The first assumes that the sentence is the unit or element of thought, and should therefore be the unit or element through which to convert the ear-vocabulary into an eye-vocabulary. It is analytic because it begins with whole sentences and proceeds to the analysis of these into words and letters. The word method assumes that the word is the unit or element of thought in the case of the child, and is the largest whole which he ought to be expected to grasp at first.

The sentence method. — The sentence method is, perhaps, nearly an ideal way of teaching beginners to read, provided it can be used under ideal conditions. These conditions are, (1) that there shall be few pupils to each teacher, separable into not more than two grades; (2) that there shall be ready access to nature out-of-doors; (3) that the teacher shall be free to do some object teaching and language work before reading is taken up at all; (4) that the teacher shall have time and tact to draw from the pupils themselves the sentences which they are afterwards to read in written or printed form; (5) that there shall be facilities for multiplying copies of exercises; (6) that the teacher shall be able *to draw.* All these conditions can, of course, obtain only in the most fortunate schools; the great mass of teachers cannot hope to enjoy them for some years to come. Yet, by determined effort, much can be done in the face of adverse conditions.

Other work may precede reading. — By some pedagogists it is deemed best not to have the child attempt to read at all until he has been in school some months. During that time he is under oral teaching in nature-study, language, and numbers. The objects in this arrangement are to enable the teacher to get at the contents of the children's minds — to discover what they know, what objects and ideas are familiar to them — and to give them some readiness in expressing thought and feeling.

Essence of the sentence method. — The best form of the sentence method is that which uses, as reading matter, sentences made by the children themselves. This is the surest and simplest means of adapting the work to the capacity of the learner, and of being certain that only such words are used in the first lessons as are already in the ear-vocabulary of the child, and whose sounds and meanings are therefore familiar to him. It will be found that the beginner will quite readily read most words, even large ones, that he understands and uses in his talks with teacher and classmates.

Expression should be unaffected. — These sentences should be the natural, free expressions of the children's thought and feeling, called out by simple and *sensible* conversation exercises, in which pupils and teacher talk interestedly and unaffectedly about some more or less familiar object, or picture, or experience. In these exercises, the interesting talk should seem to the pupils to be the main thing, not the preparation of reading matter.

Illustration of sentence method.— When the teacher is ready for the first reading exercise, he stands before the expectant pupils, who know by experience that something pleasant is coming, and asks them — for example — what grows on trees. The answers are many and various, of course, but some one will suggest *apples*. Holding up an apple, kept out of sight until now, the teacher asks, "What is the color of this apple?" the answer to which leads to other suggestions as to the color of apples. In like manner the shape of apples is made the topic of a very short, animated talk. Finally the teacher asks, "What do we do with apples?" and rapidly writes the answers on the blackboard — "We eat apples," "We peel apples," "We cook apples." He then reads these sentences distinctly to the class, pointing as he reads, and calls quickly on each pupil *to say* his own sentence from the board, still using the pointer to guide the eye as each one repeats his sentence. When all have read — though not a word has been said about "reading" — the teacher says, "Now go to your seats and each of you copy your own sentence on your slate; then you may go out to play, and have a piece of this nice apple we talked about." The division of the apple affords good opportunity for a little number work.

The sentences are left on the board, and at the next lesson, which should come on the same day as the first lesson, each pupil is called on again to say his own sentence from the board, and opportunity should be given to any one who desires to say some other sentence than his own. More sentences are formed about some object or its picture, and the reading of these from the board closes the lesson.

Reading without self-consciousness.— Nothing need be said to the pupils, for some time, about "reading"; to do so would most probably awaken their self-conscio ness and inhibit willing and successful effort. Let them read before they know it! They are thus drilled in the recognition through the eye, under the stimulus of interest, of a written form as meaning the same thing as something they have said or heard said.

This drill continues until the recognition becomes instantaneous, automatic, and extends to a good many words. The same words should be used over and over, but in many different combinations, in new sentences and "stories."

Making a "reading book." — The sentences and stories made by the pupils should be printed on slips of uniform size, and used for review lessons. Some school authorities are enlightened enough to make an appropriation for the printing of such lessons. If not, they may be induced to provide one of the many kinds of simple and efficient copying machines now on the market, with which any number of copies may be made, in either print or script. Such an instrument will be found very useful in other branches.

At all stages of advancement reading is of high value in cultivating the imagination; and even in the primary class, whether the reading matter is made by the pupils themselves, as just suggested, or books are used, the pupils should be given opportunity to draw pictures illustrating their ideas of the things read about. Children like to draw, and they should be given every encouragement to use tablet and pencil in objectifying the images suggested by their reading lessons.

The beginning of spelling.— So far nothing has been done directly in the way of spelling. But a good deal has been done indirectly, by getting the pupils accustomed to observe word forms; they have accumulated a stock of visual images of words, and from these they must learn to spell, for English spelling can be learned only through the eye.

When a good many words have become readily recognizable, some of the more familiar ones may occasionally be written with the letters *spaced* and diacritically marked, and the pupils should be drilled on the names and sounds of the letters. The teacher will ask sometimes for the sounds, sometimes for the names. Later the phonic alphabet may be put on the board and left there to be referred to as need arises. The movement forward now is more rapid, and is *analytico-synthetic* — the analysis of sentences and words into their elements, and the synthesizing of these elements into new sentences and words.

Sentence method not the most feasible.— The sentence method, as outlined above, is not feasible in many schools outside the graded systems, as things are at present. Usually the teacher is allowed no time for work in nature-study and language preliminary to reading; he must begin on the first day to teach the little people this new art, and it is generally expected, if not positively required, that he shall, from the first, use a book. To such conditions — and they prevail in the great majority of schools — the "word method," or some modification of it, as presented in various excellent primers, will be found most suited.

The word method. — The word method differs from the sentence method mainly in that single words are given at first instead of sentences. This plan has in its favor the fact that when the child is learning to talk he uses single words, not complete sentences. His words are mostly nouns, and he expresses verb ideas by *gestures* or other movements. Here is a good hint to teachers and text-book makers, to plan at first for abundant drill on nouns, and to put plenty of *movement* into the pictures.

It may be argued, further, that the word-whole is smaller than the sentence-whole and is, therefore, easier to recognize and retain. Words, moreover, may be more simply pictured than sentences.

Processes of the sentence method equally usable in the word method. — Whenever they can be used, the best and livest processes by which the sentence method is made most effective will be found fully as good in getting desirable results from the word method. The teacher will use the best that any good method has to offer, making for himself an eclectic method, and breathing into it the breath of his own life. In reading, as in everything else, "the letter killeth, but the spirit giveth life"; the live teacher will not permit the letter of any method of teaching reading to kill the *interest* of the learner in the *thing read.*

Results of the first year's work. — At the end of the first year, if the child has been rightly taught, he will be able to pronounce clearly and *unhesitatingly*, at sight, the simpler and more familiar words which he uses in talking; he will be able to spell most of them; he will have some skill in writing a good many of them on tablet or slate; and, best of all, he will have caught some glimpse of what good things are in store for him to enjoy, as soon as he can read easily.

Value of "mechanics of reading" reëmphasized. — But the learner can take only slight hold upon this promise of pleasure to be drawn from printed words, unless he can, as far as he has gone, use his reading freely as a tool. This he cannot do unless the drill in the *mechanical elements* of reading has been thorough and careful. Only through such drill can he escape the faults of drawling, stopping to spell words while reading, miscalling words, mumbling or moving the lips in silent reading, — from all which the world, both in and out of school, has suffered enough. But all the time the teacher must be on guard against mistaking and accepting *mechanical reading* for *mechanical accuracy* in reading.

The ultimate purpose. — The ultimate purpose in reading is to get thought and inspiration, knowledge and enthusiasm, help and pleasure, from the written or printed page. This purpose cannot be effectively realized unless the *forms* of words are readily and automatically recognized, as the first step toward an appreciation of their meaning and value. Such recognition, in the primer, must be so ready as to enable the pupil to gather in words and phrases ahead of where he is reading. Only as this is done, and done more and more easily as the reader advances, will he come to interpret with fluency, either to himself in silent reading, or to others by reading aloud. One of many devices that may be effectively used to train the eye to prompt recognition of printed words is to give the pupils for use at their seats a supply of words printed on bits of cardboard, and have them build these into sentences. Such an exercise has more than one merit to recommend it to a busy teacher.

Oral reading. — In beginning classes, the reading is necessarily done aloud. Here, as elsewhere, expression is the teacher's surest test of his own and his pupils' work.

The best standard by which to measure the pupils' progress is this definition of good oral reading: Oral reading is an interpretation of the author's thought and feeling, given in a conversational tone and in the author's own language.

Interpretation. — *Interpretation* means that the pupil's experiences, his knowledge and feeling, are reached by the matter of the reading lesson, and that he is conscious of their expression in what the author has written.

Tone. — A child's ordinary conversational tone may be better or worse than the tone in which he reads. Usually it is better, but sometimes a pupil is more amenable to training in a proper use of the voice in reading than in talking. If the child talks better than he reads, it is because he *feels* more vividly what he talks about, and can more readily use the oral word than the printed one. Whether he talks well or ill — as to tone — it is, nevertheless, the highest praise that can be given him or his teacher, to say that he reads as he talks. The teacher must look after tone, pitch, emphasis, enunciation, in both talking and reading, and make improvement in the one help improvement in the other. But if the thought and emotion in what is being read really have possession of the reader, he will give emphasis and inflection naturally, and though not always correctly, yet more correctly than by any mechanical rules that can be given him.

The teacher's reading. — Since reading is an art, and art is, in the case of children, almost wholly imitative, it means much for the progress of beginners if the teacher can read well. He should read much to his pupils, not merely the exercises which they are to read, but stories suited to their age and liking. From such reading the pupils will gain much, and their unconscious imitation of it will go far toward forming their own oral expression. It will be found a fruitful plan for the teacher to keep an interesting book (under key) in his desk, from which it is understood that he will read for the delectation of the pupils, when — and only when — they have done excellently in their own reading.

Many things affect the quality of oral reading. — Many things that contribute to good oral reading should be cultivated for other purposes as well. The teacher should, without special reference to reading exercises, train the pupil constantly to right use of the voice, proper position of the trunk in sitting and standing, and full and deep breathing. All these are of prime importance in good oral reading, but they are also fundamentally necessary in themselves. Culture of all the faculties of the mind — especially of imagination and the feelings — necessarily and strongly influences the adequacy of the interpretation in reading. The point to be made clear is, that, as oral reading is a form of *expression*, all physical and mental activities are tributary to it.

But oral reading receives too great a proportionate share of attention in most schools; and much of that attention is wasted because of too little care given to cultivating right habits and methods of *silent reading*.

Silent reading. — Silent reading is the adequate interpretation of the printed page to one's self. One prime end of the school's training of pupils is that they may use books intelligently. When one can *read* in the fullest and deepest sense, he is potentially in possession of all knowledge and quickened by all feeling.

The learner should begin to form habits of rapid, i telligent, silent reading as soon as he is able to read all. Even in the second or third week of his reading experience, the pupil should be tested and trained sometimes by sentences written on the board, directing him to do something; these he is not permitted to read aloud, but is required to do what they direct.

Training in silent reading. — Occasionally in the lower grades, oftener in the higher ones, the teacher will have the pupils recite the lesson without reading it in class at all. This means that the pupils, under the interested and interesting questions of the teacher, discuss in their own language "the story" they have read, instead of reading it aloud. Only by this plan, varied in many ways, can the teacher have any certainty that the pupils get the spirit of what is read or look upon the reading exercise as anything more than a mere lesson to be "said" perfunctorily.

ADVANCED READING

When the pupil has so far mastered the mechanics of reading as not to be hampered in his reach after the meaning by his inability to recognize printed words at sight, he may be classed in advanced reading.

No sharp demarcation between primary and advanced. — Between primary and advanced there can be no sharply drawn and distinct line of demarcation; the transition from one to the other is gradual and is hardly perceived by the pupil.

The series of readers only a ladder. — But, as a general rule, it is in the fourth reader that the change is made, or should be made. If the teaching and learning have been what they should, up to and through the fourth reader, there is no use of using "readers" further up in the series. A series of readers is only a ladder by which the pupil climbs from the lower level of ignorance of printed and written language to the upper level of appreciation of good literature. If he has climbed rightly, he will be ready to step from the fourth rung into the entrance ways that lead to the world's garnered stores of thought and feeling. When he has finished the fourth reader, he should be able to read with ease and enjoyment much of the choicest literature, and should no longer feel — if indeed he has ever consciously felt — that he is reading in order merely to learn to read.

Oral reading should be kept up. — Above the fourth reader grade, there must still be some oral reading; but it should, for the most part, be made incidental to what is now the prime purpose — the development of the literary appetite, and, along with that, the cultivation of the literary taste.

Ethical value of reading. — The boy or girl who has these — who knows the right things to read and loves to read them — is *safe*, and the school has done for him or her the best possible thing. The words of Dr. Hall are none too strong when he says, ". . . The school has *no right to teach how to read*, without doing much more than it now does to direct the taste and confirm the habit of reading what is good rather than what is bad."

Dangers of reading. — It is really to be preferred that the boy should not know how to read, than that he should know how, and, through that knowledge, fall under the influences of evil books. It is better that the girl should grow up ignorant of any art of letters, than that her life should be lived distortedly by reason of false ideals gained from reading pernicious fiction.

Accounts may be seen almost daily, of boys and young men whose lives are gone fatally awry as the result of bad reading, and many a young woman has set her feet in the evil path while blinded by the glamour of some subtly vicious story. There is no need of a curfew for boys and girls that have been so taught that they like good reading, and for whom good reading has been provided. Their interests are drawn elsewhere than to the streets, and they love other associations better than those of the corner and the alley.

The largest part of the harm done in the world is done by people who have no pleasure in communion with good books, and, as a consequence, have but little resource within themselves. They therefore have to turn mainly to various social ways of spending vacant hours, with the inevitable results of wasted time and energy, and doing of things that are always found for idle hands — as well as idle heads and hearts — to do.

Cultivating literary taste. — It should be apparent that the only way to put the pupil under the vivifying and saving influence of literature, is to make him sympathetically acquainted with good reading matter as early, and in as many ways, as possible. As was said above, the best is not too good for any grade, selections being made, of course, to suit each degree of advancement.

The learner can be put in contact with good literature in the primer, and the contact may be kept up all the way through school and college; but it will, in most cases, be a mechanical and lifeless touch unless the teacher is so initiated into the sacred rites of literature as to fire the pupil with the ardor of a novitiate. No one can impart an enthusiasm he does not himself feel.

SUPPLEMENTARY READING

One of the best ways of getting pupils to feel that they are reading for some more essential purpose than merely to learn to read, is to introduce them early to matter outside their readers.

The value of this supplementary reading has long been recognized, and supplementary readers are nearly as plentiful as the regular texts. Every educational sect has sought, with more or less success, to get its own especial hobby ridden under the saddle of supplementary reading.

All reading must be good literature. — But the fundamental truth should be kept steadily in view, that nothing but *literature* has any claim to a place in a series of readers, supplementary or regular. Reading matter may be secondarily and incidentally scientific, or geographical, or biographical, but it must first be literature.

The pernicious practice still exists in a good many schools of using the United States history as a "reading book," above the fourth or fifth grade. No surer way could be devised for killing the pupil's interest in both reading and history. The same may be said of any other "readers" that undertake definitely to teach other branches than good reading. Literature is old; it is before anything that can be called science. Every stage of human progress has found expression in literature; every deep of human feeling and thought has called unto other deeps, all down through the fleeting ages, in epic and in myth. If the child in his own development repeats that of the race — passing, as an individual, through epochs that correspond to the epoch of race growth — then must he find in literature t which he needs to stimulate and nourish him at each stage of his own growth.

Character and use of supplementary matter. — Supplementary matter should be a little more difficult, and somewhat more interesting, than the regular readers, grade for grade. It should be used at unexpected times, and the reading should often be done at sight; there should, at least, be no preparation made upon it out of class.

Matter suitable for this purpose may be found in Andersen's Tales, Gulliver's Travels, Arabian Nights, our own American classics, Greek and Roman mythology, Bible literature, and stories of heroes of all times and countries.

When regularly graded supplementary reading matter is, for any reason, not at hand, it will be found an excellent plan to have each pupil in the class, who can, bring from home some book of his own, and read from it himself to the class. This puts the reader on his mettle, for it is his book and he wants the class to enjoy it; it pricks interest with the spur of novelty and unexpectedness; and it shows every one that there is in reading something more to attain than word drawling. The teacher will need, naturally, to exercise discrimination and tact in using reading matter brought in by the pupils. Not seldom books will be brought that smack strongly of the "yellow-backed" brand of literature. Some insight into the pupils' home conditions will be afforded, too, and perhaps an occasional opportunity of touching their home life with better influences.

As an item of school management, it would be found well worth while for the teachers of a community — district, village, or county — to make some effective modification of the "traveling library" plan. Each teacher could furnish one book, or more, and at the monthly association meetings these could be interchanged. In this way a good supply of supplementary reading matter could be secured at slight cost, and a nucleus would be formed that would easily grow into a valuable neighborhood circulating library.

Not the least of the advantages of supplementary reading is, that it cannot become stale, if used as suggested above; while the regular readers do, because the pupil is sure to look through his reader within a few hours after he comes into possession of it, studying the pictures and reading what he can of the "stories." The text thus soon loses its novelty and freshness, and with these most of its power to interest. In this fact lies one of the strongest arguments for teaching reading as outlined in the first part of this chapter, without the use of a text. When the sentences and stories are developed freshly day by day, the interest is always keenly alive, and the learning proportionately rapid.

READING AS A CENTER OF CORRELATION

It has already been suggested how nature-study, language drill, and other forms of oral lessons, may be made contributory to reading. With even more success valuable exercises in these and in many other subjects may be correlated around reading.

Subjects to be correlated with reading. — When the pupil is taught to read, he makes a beginning in writing and spelling, and receives his first specific training in oral expression. Through his reading, even while still in the primary stage, he should come to know somewhat of the grammar of the language; and, as he advances, should make some acquaintance with biography, history, and geography in its broadest sense.

Writing and spelling. — Almost as soon as the learner can read a word he should also write it. In this writing, spelling is, of course, involved. Later, spelling becomes a regular drill in connection with the reading.

Composition. — The "mechanics" of composition — capitalizing, punctuating, paragraphing — should be almost automatic with pupils in the fourth reader; and this result should be reached mainly through the reading exercises and practice in sentence making in connection with them.

Grammar. — Along with this drill in composition, — which should be perfectly free of rules, except such as may be easily drawn inductively, by the pupils themselves, from their observation of sentence structure in the reading lessons, — there should go much indirect, simple, inductive work in grammar. By the time a pupil has properly finished the fourth reader, he can readily recognize the parts of speech, in their simpler constructions, and should know something of sentence analysis.

It is not best, while this sort of incidental work is going on, to make any mention, to the pupils, of "composition" or "grammar." There is too apt to be a sort of traditional fear of the school work these terms name, in the minds of even young pupils.

Biography, history, geography. — In the later primary and in advanced classes, a good deal may be done incidentally in biography, history, and geography. It is not best that the reading matter be specifically biographical, or historical, or geographical; but whenever the literature of the reading lesson presents these kinds of facts, they should be made to yield their full share of stimulus and nutriment. This should be done with especial care in descriptive prose and in poetry. The best poetry is the poetry of nature, and it is good in direct proportion to the truth with which it states, in poetic form, the accurately observed facts of nature.

CHAPTER IX

SPELLING

To learn to spell English words is a difficult matter, requiring years of effort; yet there is no test of literacy or illiteracy quite so rigidly applied as the test of ability to spell. Solecisms of speech are made constantly, on the rostrum, in the pulpit, in the press, and are pardoned or not noticed; but let a man commit himself to writing, unless he can spell, or blame his misspelled words on the typewriter, he has fatally blundered. No one pardons a poor speller. An orthographic slip (in a letter or on the printed page) is a personal affront to the reader; it offends the eye even more than an orthoëpic slip does the ear.

The spelling of the last generation. — There was a widespread belief, some years ago, that modern methods had produced poorer spellers than those became who used to " line up " under the stiff discipline of the old "blue back." There was some good ground for the belief, for it is almost inevitable that the reaction against any abuse will carry the reform too far. So, from overmuch attention to oral, alphabetic spelling, the schools swung for a while near the other extreme of no definite drill in spelling. On account of this, the poor speller is still quite a good deal in evidence.

What the art of spelling includes. — The art of spelling includes more than merely the correct placing of letters in words. To know how to spell is to know not only what letters are in a word, and in what order to place them, but to know also the phonic value of each letter and the symbol (diacritical) of that value, the correct division of the word into syllables, on which syllable the accent falls, and — by a little extension of the subject — something of the derivation and use of words.

Stated somewhat technically, spelling includes *orthography*, *orthoëpy*, and, to some extent, *lexicology*.

Each grade may include all three. — The pupil is concerned with all three from the time he begins to read; as soon as he can read at all he must begin to learn something of orthography, pronunciation, enunciation, and the meanings of words. The beginner gets all these in his reading lessons, and there he should also begin to form the habit of *observing word forms*.

The old spelling was ear spelling. — The chief fault of the old oral spelling was that it appealed almost altogether to the *ear;* and the habit thus formed and fostered, of spelling a word as it *sounds*, clings so tenaciously that it is no uncommon thing for a pupil, used to oral spelling only, to copy a sentence or paragraph with book in hand, and misspell several words.

Drill in orthography must be through the eye. — It ought to have been realized much earlier than it was, that English can never be spelled by *ear*. But the old schoolmaster knew nothing of "visual images" or "auricular images," and the adult poor spellers of to-day are, at least partly, the result of his ignorance. The one fact to keep fixedly in mind, in the teaching of orthography, is that the pupil learns to spell — if he learns at all — by *forming and retaining accurate visual images* *of word forms.* He must learn orthography almost altogether by *eye.* The teacher's drills in orthography must be of a nature constantly to require the pupils *to observe word forms* and print them retentively on memory. The good speller feels his eye arrested at once by a misplaced or incorrect letter in what he is reading.

The orthographic value of reading and writing. — The two exercises that afford most abundant opportunity for drill in observing forms of words, are reading and writing. In the one the word is seen, in the other the visual image is reproduced. The justifiable inference is, that careful reading and careful writing — both properly directed in school — will make good spellers. As was seen in the last chapter, these two exercises should be carried forward together from the very beginning, the child doing his first writing on the day of his first reading.

Phonics should not be first. — Out of all the dust of discussion of the subject of spelling, the fact seems clearly to emerge, that the learner's first acquaintance with words to be spelled should be with letter *forms* and not with letter *values.*

Two reasons may be given for this: (1) a drill in phonics is too hard for beginners; (2) beginners do not *need* a knowledge of letter values and their symbols.

To add a phonic drill to the new and difficult work required of a child who is beginning to convert an ear-vocabulary into one of the eye is to make the task too hard, for pupil or for teacher, or for both. It is demanding too close a study of arbitrary symbols and the purely arbitrary association of these with sounds meaningless in themselves.

Beginners have no use for phonics, because charts, primers, and first readers are not printed with diacritical marks. The words in these first books are so familiar, orally, that the learner knows how to pronounce them, if he can recognize them in print, and diacritical marks would serve to confuse rather than to aid him.

A pupil has no real need of a knowledge of diacritical marks and their values, until he is advanced enough to use a dictionary. But some acquaintance with sounds and their symbols will prove convenient even in the second reader grade.

Written spelling the most practical. — The first spelling a pupil does is, of course, written; and as almost the only practical use he will have for orthography all through life will be when he is writing, it seems clear that most of his drill in it should be by writing.

Elementary eye-drill in orthography. — After there has been some practice in writing words as wholes, the teacher may write on the board, with spaced letters, some simple words taken from the last reading exercise; and the pupils will, for several lessons, copy words thus spaced, in this way getting more or less clear eye-pictures of words as made up of separate parts. So far, any learning of spelling has been indirect, but none the less helpful.

Memory drill in orthography. — The pupils, by this time, will have learned most or all of their letters, incidentally and indirectly; and some memory drill in orthography may now be introduced. A word is written on the board, with spaced letters, and, after the pupils have noted it carefully, it is erased, and they are asked to copy it from memory, on blackboard or tablet.

This work of the children should be carefully watched by the teacher while it is being done, in order to detect and set right any tendency to form letters in wrong ways. Beginners, until they are shown how to do, often make the loop of the "p" on the down stroke, begin at the bottom to make "c," and commit similar blunders with other letters.

Oral spelling. — After the drill just described has continued some time — three or four weeks — oral spelling from memory should be begun. There need be no oral "spelling on the book" at all, except for variety. All oral spelling should, at first, be by the *names* of the letters.

This oral spelling has its value in all grades; although it alone cannot make good spellers, it can be made to help considerably to that end.

Spelling matches. — Under the stimulus of competition, in the old-fashioned spelling matches and other forms of "turning down," a pupil's observation of word forms is greatly quickened; and if he misses a word in these contests, he will be apt to remember its correct spelling as long as he lives.

For some purposes these older methods cannot be improved upon. There is much profit in having one or more classes of the more advanced pupils stand in line and spell a previously assigned list of words, with "turning down" and "going foot" as penalties for errors. And the regular monthly spelling match, with its captains, its "choosing out," its stubbornly fought contest, stimulates the orthographic activity of a whole school, even of those pupils who are not engaged in the struggle.

Properly varied, such work will be found very valuable in spurring ambition, and in creating an *esprit de corps* of class and school. Everybody will be proud of the "good spellers," and be desirous of becoming one.

Pedagogical principles in force. — In conducting such exercises, the principles that govern all teaching must be observed. Words should be given out *quickly*, but clearly, with distinct enunciation, correct pronunciation, and should be given out but *once;* nor should any pupil have more than one "try" at the same word.

Value of oral spelling. — The chief good of oral spelling — next to the verve and spirit of emulation aroused by it — is the drill it affords in clear enunciation and correct pronunciation. In all oral spelling, special regard should be had for these two points. The pleasing effect of a good voice may be greatly marred by careless enunciation. Pupils should be trained from the very first in distinctness of utterance, in giving the vowels their full value, with a deep open throat. As much emphasis should be put upon clear and well-modulated utterance, and upon correctness of pronunciation, in oral spelling as in reading.

Phonic spelling. — From about the beginning of the fourth reader grade, carefully conducted drills in purely phonic spelling should be given, — that is, lists of words should be assigned to be spelled only by the *sounds* of the letters.

For some time, when this work is first taken up, the words should be written on the board by the teacher, and the letters marked plainly. As the pupils advance, lists of words should be given unmarked, and the pupils required to find their correct marking and to spell them accordingly.

The weakness of oral spelling. — People do not go through life spelling orally; the preacher does not spell to his flock, nor the lawyer to the jury, nor even the teacher to his school. But these and all others have need to *write* words, and the boy or girl brought up on oral spelling alone, will be apt to miss some quite common words in writing a simple letter.

One of the objections to oral spelling, at least in advanced classes, is that it is frequently too much concerned with "sesquipedalian words" — like "transubstantiation" and "incomprehensibility" — to the neglect of words in everyday use. The long words may be well enough for occasional orthographic gymnastics, but they are not often seen in print; and the pupils who are most successful in spelling them orally frequently blunder when writing such words as "very," "much," "hoping," etc.

Value of written spelling. — Written spelling gives a double opportunity to imprint visual images, and it strengthens these impressions through both ear and hand. It has the advantage, also, of enabling the teacher to test each pupil on every word.

Written spelling exercises may be greatly varied, and much may be done in them besides merely writing a list of words with letters correctly placed. Quite frequently this may be all that is required; but sometimes the exercise should include proper syllabication — an important and rather neglected matter; sometimes the teacher should require all letters to be diacritically marked and the accents properly placed; and at other times account should be taken of capitals, hyphens, apostrophes, and of everything that helps to make the words.

Incidental spelling. — The foregoing suggestions, although mainly intended for the regular drill in spelling, will apply as well to the incidental spelling that should form a part of nearly every lesson recited.

Every class a spelling class. — In almost every recitation there is some work that should be put on the board or on the tablets, and the orthography in *all* written work, on whatever subject, in whatever grade, from the primary through the university, should be as carefully noted and corrected as anything else in the exercises. Every class can be made a spelling class, and the pupils should understand that they are liable to be called on to spell any word in any lesson. Thus they will be led to form the habit of *close observation* of the *word forms* met with in reading or study, — and this is the best way to learn English orthography.

Every book a spelling book. — The readers will naturally furnish the largest number of words for this incidental work; but in geography the supply is almost unlimited; and history, physiology, civics, and arithmetic afford a great many. Spelling is such an integral part of composition and all other forms of written language work that it should not be called "incidental" in connection with them.

The proper carrying out of these devices renders a spelling book unnecessary; every book is a spelling book. The teacher should have, for his own use, however, several up-to-date spellers to save time in making out lists of words.

But no matter how many he uses as aids, he should frequently make his own lists of words, to suit each grade of pupils and to answer the special purpose he may have in view in each case.

Lists of words should be grouped. — When words are given in lists they should usually be grouped on some suitable basis of classification. Spelling is almost wholly memory work, the recalling of sounds and images, and memory is greatly aided by associati

Sometimes the basis of grouping should be simply vowel sounds in the words — the whole lists involving short "a" or long "o," or "i" before "r" or some other vocal value, as the associational characteristic. Some excellent drill lists may be made up of words alike in sound but different in spelling, or alike in spelling but different in pronunciation and meaning.

For lower grade work lists of a definite number of words may be made up from the names of parts of plants, from names of farm tools, kitchen utensils, qualities of objects, acts performed in various occupations, — and so on without limit.

In advanced classes the lesson may frequently be assigned with some indefiniteness, thus: "To-morrow we will spell twenty words that are names of things bought in a grocery," — or in a hardware store, or by the yard, or by dry measure, or that are used in the dining room. The idea, of course, is to give practice in spelling words in everyday use.

Reviews. — In spelling, as in any other subject, reviews should occur often, and the material for these should be made up chiefly of words that have been missed in previous oral or written exercises. The teacher should make memoranda of these words at the time they are missed, and have them in readiness for these reviews.

"Logomachy." — There is one device which may be used with excellent results, from the fourth reader grade up, that is so well based upon sound principles as to be worth specific mention here. It is the game called "logomachy" — a word-fight. It may be varied in many ways, but it consists essentially in trying to make as many words as possible out of letters printed on separate bits of cardboard, which are distributed to the players. The play necessitates correct spelling and frequent recourse to the dictionary; it arouses emulation, and fixes eye-images of words in the memory.

Lexicology. — Toward the latter part of the third reader grade, pupils can profit by some drill in the use of a dictionary, and this "dictionary drill" should continue in various ways through all grades.

The old plan of using the school dictionary as an advanced spelling book, and having the contents spelled and defined, word by word, from A to Z, was a pedagogical horror; the dictionary should be used for what it is — a reference book.

The first drill in its use may well be simply the finding of words in it. For this purpose, and for all the dictionary work in the lower grades, any of the several excellent school dictionaries now published will serve admirably. In advanced grades and high schools the complete dictionaries will be used.

All new words should be looked up. — The drill should not, unless with quite advanced pupils, be upon isolated words, assigned merely to get the dictionary used. The guiding principle should be: Every new word met with in any lesson should be looked up in the dictionary; and often additional information should be sought regarding words already familiar. Only by forming habits of word study in accordance with this principle can the student's vocabulary be enlarged and enriched, and his use of terms become accurate.

In advanced classes, all that the best dictionary gives should be learned about words, — their orthography, pronunciation, syllabication, etymology (both grammatical and philological), definition, illustrations of their use, and sometimes their synonyms and antonyms.

In these drills, attention should be given also to word formation, compounding of words, the value of prefixes and suffixes, rules of spelling, changes in word fashions, provincialisms, etc. All this work with words will be found most enjoyable, and fruitful of the culture that marks the man of letters.

CHAPTER X

OBJECT LESSONS

Includes more than "nature-study." — As stated in Chapter VII., "object lessons" includes more than "nature-study," which has of late years almost wholly supplanted the older and better term. The name "object lesson" is preferred here, because it helps to call needed attention to some kinds of work that should be done in all schools, but that are not phases of nature-study. In its full meaning the term covers work done with objects, in all grades from the kindergarten to the laboratory research of the original investigator.

The several kinds of exercises with objects, suitable for the lower grades, may be shown thus: —

Object lessons
(1) "Information talks."
(2) Use of objects to illustrate various branches.
(3) Nature-study (elementary science).

Each of these, with its variations, has its definite and important uses, at least up to, if not through, the high school.

"INFORMATION TALKS"

Instructing an essential part of teaching. — An essential part of teaching is *instructing* — the direct and outright giving of facts to the learner. Some instructing must be done in every subject; there are facts in every branch which the pupil either cannot get by himself all, or cannot so get without too great waste of time and effort. Still, the teacher will do well to remember that there is much less instructing than developing and training, in good teaching. But there should be some definite instruction aside from and outside of the regular school branches.

Information lessons a means of quickening curiosity. — The teacher will find information lessons on common objects one of the pleasantest and most effective means of quickening curiosity — of whetting the *appetite to know.*

The purpose is not so much to have the pupils observe and find out, as for the teacher, at definite times not too frequent, *to tell* the pupils in the most interesting way the most interesting facts about common things. Such talks will result not only in increased knowledge on the part of the pupils, but in a greater desire for more knowledge, and a quickening of the acquisitive activities.

For these informal talks the teacher has an unlimited range of themes; the subjects may be chosen from the inexhaustible list of manufactured articles, or from nature. The exercises may involve, on the part of the pupil, the activity of both senses and memory, or of memory alone.

Familiar objects are best. — As a rule, the objects chosen should be the most common and familiar things, — a drop of water, a bit of coal, a lump of dirt, a lead-pencil, a nail, a blade of grass, a bottle, a piece of paper. Upon these and hundreds of others as simple and familiar the live teacher can interest pupils and stir their minds to a more strenuous reach after knowledge, doing much to arouse the abiding interest in, and love of, knowledge for its own sake, without which no one can grow.

Common things are not commonplace. — One definite purpose of such exercises should be to ground the pupils in the conviction that *common* things are not *commonplace*, but that each tells a story of human invention and skill, of progress and comfort, or is eloquent of the divine creative and purposive energy.

The magazines and papers are sources of abundant information on just such things as were mentioned above; articles often appear on such subjects as "The story of a lump of sugar," "How buttons are made," "The uses of waste materials," etc. If the school is near a paper mill, an ice factory, a cotton gin, a machine shop, or any other sort of manufacturing plant, the pupils should be taken to see the work done there.

Careful preparation necessary. — Such talks as are here suggested require most careful preparation by the teacher — selection of facts and a study of the clearest and most attractive method of presenting them.

The following illustrations may prove suggestive. Suppose the teacher to have selected "A piece of paper" as the topic. Without announcing a subject, he quietly places a leaf from his scratch-book in view of the pupils, and says: —

Years and years ago, away out on the side of the mountains that face the big ocean, a pine tree grew beautifully tall and straight and strong. It was just one in a large forest of such trees; but one day, a little while ago, when the wood choppers came that way to fell timber to be used in making many things, they picked out this splendid tree among the very first. After it was cut down, the long, straight trunk was sawed into logs and these were hauled away to make lumber, — and we'll have a little story about one of the planks some day. But I want to tell you now how part of that tree came to be this thin, smooth bit of paper.

The best parts of what was left of the tree after the logs were cut were taken to a factory, and, after being trimmed into proper size, were put into a big steel pot with some chemical stuff to soften the wood, and cooked with steam for a long time. When the cooking was finished and the wood was taken from the pot, it was soft and mushy. This pulpy stuff was then run through the proper machines and washed and pounded till it was thoroughly clean, and mashed till it was soft and thin, just as this paper would be if you should soak it and stir it a good while in water.

This thin pulp was next run out upon a long, wide belt of wire netting, so closely woven of fine wire as to be like cloth. Through this netting the water drained out of the pulp, and left a sheet of soft, wet paper. This was passed carefully through other machines that pressed and smoothed and polished it, and at last it was wound into a big roll and shipped to another factory, where it was cut into small sheets and made into your blank books.

Now, after you have asked any questions you want to about what I have told you, you may write the story on your tablets — write on a part of the pine tree how the pine tree came to be paper.

The questions will come fast enough, and will call forth the further information that paper may be made from rags, straw, grass, weeds, or anything else that is fibrous. The pupils may also learn something of the history of paper, and especially its modern uses.

The teacher's ready ingenuity will find many variations and practical applications of the "information lesson." It may form the basis of reading exercises, drawing lessons, language work, and composition.

There is no valid objection to making the matter and the method of these talks gratify not only the child's desire for knowledge, but also his natural liking for personifying objects and forces. Some criticism has been directed at the "story methods" of elementary science, but it seems to be entirely unwarranted, provided only that the story be accurately true wherever it touches a fact. The kind of "story" here suggested is illustrated in the following: —

THE WATER-DROP

Once a water-drop that had traveled a long way through big pipes and little pipes, and had rested a while in a high water-tank, found himself at last in a very hot place. The little drop didn't know it, but he was in the boiler of a locomotive, and there were thousands of other drops there too. The big fire under the boiler blazed and glowed, and made it so hot for the little drops that they all got to dancing and jumping about very excitedly. Presently a great many of them, with our water-drop among them, flew into steam, as water-drops always do when they get very hot. The water-drops that had turned to steam struggled and strained and pushed to get out, but the steel boiler held them in. Some of them tried so hard, though, that they pushed open a sort of trapdoor in the top of the boiler, and rushed out with such a jump and flutter that they scared a horse and nearly made him run away, and frightened a poor old lady in the railway station so that she clapped her hands over her ears and cried out "Gracious!"

But our little water-drop didn't get out through the trapdoor. While he was struggling and pushing he suddenly felt the other water-drops — steam-drops they were now — rush forward, and he rushed with them, hard as ever he could, and found himself in a tight box, sure enough, where he was squeezed harder than ever, so hard, indeed, that he felt he could not stand it a second longer. He was in the steam-chest of the locomotive and was helping to push against the whole weight of the train.

All at once the squeezing stopped, and away the steam went, just flying out of the escape pipe with a hearty "chuff" of satisfaction at being free again.

As soon as our water-drop got outside into the cool, fresh air, he began to feel less excited and to gather himself together. As the train rushed on, he and his companions were left floating in air, in a beautiful, rolling mist. And the sunshine flashed through them and made a delicate little rainbow, so that some children whose way home from school was by the railway, laughed and called to one another to look quick, and clapped their hands in fine humor.

But the little vapor-drop drifted away into the evening shadows, and kept getting cooler and cooler all night, until at last he gathered himself gently about the tip of a flower petal, and when morning came there he hung, a shining drop of dew, full of dancing, flashing light, and as beautiful as he had been useful.

Some day I will tell you how the water-drop got into the great wide ocean, and helped to do some more good work.

USING OBJECTS ILLUSTRATIVELY

It was suggested some pages back that the elementary and fundamental facts of every branch were material for acquisition. The pupil should thoroughly learn these facts and the work should be illustrated and made concrete by objects. Even in advanced classes every subject should be well illustrated objectively. This is the purpose of laboratories, of the growing use of the stereopticon in schools and colleges, and of all other apparatus.

Illustrative methods of objective oral drill in the beginnings of the several school branches will be found in the discussion of these branches in later chapters.

NATURE-STUDY

The teacher must have accurately defined and clearly outlined in his own mind very much that it is not at all expedient for him formally to define or outline for his pupils. This is especially true of nature-study work. Its fundamental purposes, its various phases, and its methodology must constitute a thoroughly assimilated part of the teacher's equipment, or nature-study will surely degenerate into a mere perfunctory exercise *about* things, instead of being a delightful learning of things at first hand.

Main divisions of nature-study. — There are two rather clearly discriminated divisions of natural science study, that are apparent all the way from the primary work up. These are the *observational* and the *experimental.*

The observational sciences are Botany, Geology, Zoölogy, Meteorology, and Astronomy; the experimental sciences are Physics and Chemistry. This classification should be borne in mind by the teacher, whether he has work done in a few only or in all these subjects, in the chart grade or in the university.

The distinction here drawn does not mean that observation is not involved in the experimental sciences; it means only that, in these, experimentation must usually precede observation, while in the observational sciences there can be but little if any experimentation.

Relative value of the two kinds. — It will probably be found that, as a rule, such work as can profitably be done in the elementary grades in the experimental sciences is more difficult, generally somewhat less interesting to the pupils, less adapted to the culture of the æsthetic and ethical feelings, and more adapted to the exercise of the reflective powers, than is that in the observational sciences. In observation exercises the questions are: What? When? Where? and quite often, also, Why? In experimental work the main questions are: Why? and How? Work involving many *whys* should come later than exercises that do not call out the specific activity of the judgment.

Elementary science must be, simple. — Inexperienced teachers need in no wise be deterred from undertaking elementary science work, by the array of apparently formidable names in the classification given above. The simplest objects and the simplest phenomena will usually be most illustrative and useful. The parts and shapes of leaves, their autumn coloring, the rising of sap, the structure of buds, the sprouting of seeds — things the child *sees*, perhaps, every year, but rarely *observes* — afford rich material for work in botany. The flight and song of birds, their nesting habits, their food; the peculiarities and uses of domestic animals; the insects that are useful and those that are obnoxious to man, — all offer inexhaustible opportunities for zoölogical study.

Physics includes such facts as that water wets paper, is absorbed by a brick, rolls in drops over a dusty floor, and evaporates from the vase of flowers on the teacher's desk; and such facts are essentially as important as the latest discoveries in electrical science. There is as much chemistry in the fire that warms the room, in the rust on the boys' knives, in the bread the children eat for lunch, and in the water they drink, as in the most recent achievements of chemical experts.

Principles and illustrations given. — Even if it were desirable to do so, space is lacking to give a detailed outline of the character and amount of the work to be done in each grade. An attempt is made only to suggest certain principles and facts that should guide the work in all grades, and to give a few specific illustrations of the manner of handling those subjects in which work can best be done.

(1) For nature-study to be effective the pupils must

come into ***unreserved and interested contact with nature.*** They must observe and experiment *for themselves,* at first hand. Nature-study must never be allowed to degenerate into a mere parroting *about* things.

(2) Accuracy and completeness of observation are the first ends to be sought. Others should be kept in view, but these two must be first, in order to secure the others. The senses must give and the memory hold correct impressions and many of them, in order to give imagination and judgment any work worth while. Nature-study must train all the senses — smell, hearing, and taste, as well as those that usually receive most attention.

(3) All work in elementary science should at first be *qualitative* rather than *quantitative.* The value of quantitative work lies in exactness of measurement, and such exactness involves a carefulness in judging which should not be required of beginners.

(4) The work throughout must be so planned that the pupil shall come to see something of unity in nature, in the great diversity of things. By skillful direction and judicious questioning the teacher must bring the pupil to see for himself the distinctions between organic and inorganic, vegetable and animal, physical and chemical; and, as advancement is made in power of observation and comparison, finer and finer distinctions of function and structure will be perceived and enjoyed.

(5) The teacher must have the *true inquiring spirit* and an overflowing love of nature and her truth. Only if he have these can he impart them to his pupils, and only through these can he be interested and sympathetic with the pupils' efforts to find out for themselves what may be already perfectly familiar to him.

(6) Pupils will need occasionally to be quickened into active questioning by *skillful questions from the teacher.* It is not enough to place the pupil among the objects to be observed and tell him to "look and see." By artful suggestion or stimulating question, he must be made *to see that there is something to see*, or a yellow primrose will be to him a yellow primrose and nothing more.

(7) Remembering that the commonest facts of the child's everyday experience afford the best material for nature-study, the teacher must carefully avoid both telling him what he already knows, as if it were new knowledge, and setting him to observe what he may have already observed many times. It is the stimulus of surprise at finding the *new* in the *familiar*—and the familiar in the new — that gives zest to investigation in any stage of science. The constant aim of the teacher must be to get the pupils *to see* in the common things around him what he had not seen before, though he may have had his eyes upon them hundreds of times.

(8) Nature-study should be made to supply the material for much other work. It is a valuable core of concentration. Drawing and modeling should be a part of almost every exercise in nature-study. Not only does the hand greatly help the eye to see, but it also helps the memory to retain. The facts acquired should undergo some degree of assimilation — should be acted upon by *judgment* and *imagination;* the facts and their relations should often be treated as material for *expression* by drawing, modeling, telling, and writing; and the high *æsthetic* and *ethical* value of nature-study should be constantly made manifest. Nature-study has an especially rich character-building content.

LESSON PLANS

The following plans are designed to illustrate both the general principles of method that have been laid down and the specific method of nature-study exercises. They are, of course, in the details, to be taken by the teacher rather as suggestions than as rules.

The principle that should guide in the selection of material is the analytico-synthetic, the one based on the fact that the natural movement of the child's mind in learning is from the whole to the parts. And the caution that goes with that principle must be here carefully observed — that a whole should be selected suited to the advancement of the pupil.

First Lesson on Plants

I. Special ends of the lesson.

(1) Training in analytic observation of a plant as a whole.
(2) Teaching names of the five principal parts of a plant.
(3) Teaching the essential functions of these parts.

II. Processes in realizing these ends.

(1) The teacher brings into school in the morning, or after some recess, a freshly pulled plant — any simple wayside weed, in preference to a cultivated flower. A plant should be selected with both flower and fruit, or seed, upon it.

(2) When the little people, who should not have been told what was coming, are called up, the teacher, holding up the plant, asks, "What is this"? The answers will be various, several pupils saying it is a weed, some calling it by its common name, others, attracted by the bloom, saying it is a flower. It is pretty certain that no one will call it a plant; and if the teacher can, in a few seconds, question the children into using the term "plant" it is best to do so, otherwise, he simply

and quietly says, "It is a plant," and immediately asks the pupils to name some other plants.

(3) Beginning with the root, the teacher asks what it is, then the stem, or stalk, next the leaves, then the flower and fruit. All country children and most city children will be able to name these correctly and instantly.

(4) Beginning again with the root, the teacher asks the *use* of each part. Few children will be able to give good answers for all the parts, but from the whole class sufficiently correct replies may be drawn.

(5) To close the lesson the teacher says, "To-morrow, each of you bring me a plant with a root like this."

Another lesson may be on leaves.

Lesson on Leaves

I. Special ends of the lesson.

(1) Training in observation of form, size, and structure.

(2) Incidental teaching of the technical name of some part of a leaf or some kind of leaves.

II. Processes in realizing these ends.

(1) Tell the pupils to gather, as they come to school the next morning, three or four kinds of leaves from plants, bushes, or trees along the way, and to gather two or three leaves of each kind.

(2) When the leaves are brought, the teacher mixes them up, and then gives five or six, or more, to each pupil.

(3) Then the pupils are told *to sort* each his own pile of leaves, putting those that are alike together. It will be found that the pupils will sort by different bases of classification; one will arrange his leaves according to size, another according to color, another according to shape. It would be remarkable if any one, in this first test, arranged his leaves according to any characteristic of *structure*.

(4) When the leaves are arranged the teacher looks quickly at each pupil's results, and announces, clearly and quickly, on what basis each one has arranged his

leaves, as, "Henry has put his green leaves together and his yellow ones to themselves"; "Sara has put all her little leaves in one pile and her big ones in another," etc. Then he asks the class which is the best way to sort the leaves, and, if possible, by quick and skillful asking, not letting interest flag, he brings out the idea that the leaves would better be classified according to shape and structure. He illustrates, *with leaves in hand*, the difference between simple and compound leaves, and immediately asks the pupils to arrange their leaves, putting the simple ones together and the compound ones to themselves.

(5) The lesson is closed by the teacher's telling the children to bring him to-morrow, each one of them, a compound leaf. As the pupils go to their seats, a leaf is given to each one to draw.

Substance of other lessons on leaves. — In other lessons on leaves, the pupils may be led to classify them according to tip, base, margin, stem, and shape of the whole leaf. Such terms as acute, obtuse, cordate, entire, serrate, petiole, petiolate, ovate, may be learned *objectively*, and applied in future work. The work should not for an instant degenerate into a learning of names for the sake of the names; the purpose all the time is the cultivation of *observation* in perceiving the differences of form, which are signified by the names.

Function. — In all nature-study much attention must be given to *function*. The pupils should be set to finding out as much as they can for themselves the *uses* of things. A comparison of the upper and under surfaces of leaves, and the noting of the moisture collected on the inside of a glass inverted over a small growing plant — like the moisture of the breath condensed on window pane — should do much to teach the use of leaf as a *breathing* organ.

The horizontal position of leaves on trees and plants will readily be perceived as the best for giving shade; and the value of shade to the tree or plant is a matter of direct observation and inference.

The heaps of decayed and decaying leaves in the woods will suggest the value of mulch and methods of soil enrichment. What leaves are used as food by animals and man, how they are prepared, and how they may be protected against the ravages of insects, should be studied as opportunity offers. Such work is the beginning of economic botany.

Especially should the *æsthetic* function of leaves be considered, how they stimulate and delight and satisfy the sense of beauty, by their soft greenery in spring, by their heavy masses and banks of foliage in summer, and by their splendid color effects in autumn.

Flowers should be studied. — But while leaves are being observed, attention should not be given to them alone; a study of other parts of plants may go on concurrently.

Autumn flowers are abundant and beautiful; and because of their abundance, beauty, and variety, they are better for nature-study work, in most parts of this country, than the flowers of spring.

Technical names.— In the study of flowers, as in all nature-study, technical terms should be learned when needed to name a concept. There is nothing at all inherently difficult in the words "calyx," "sepals," "stamens." The only point to be guarded is that no term should be used until the pupils know by actual observation what *thing* it names; and when they do know the thing it is natural and easy for them to learn its correct name. A technical name should be learned much as the name of a new pupil is, by the teacher's simply *calling the name* as occasion arises. The teacher does not stand a new boy before the class, and say, " This is Henry White;" neither need he pluck off a leaf of the calyx and say, "This is a sepal." If he uses technical names simply, naturally, and correctly, throughout the science work, the pupils will learn them as readily and with nearly as little effort as they learn one another's names.

Subject-matter of lessons on flowers.— Exercises on flowers should be planned to cover such points as the parts, shape, and color, time of blooming, duration of bloom, a little about fructification, and the uses of the flower.

After the observational powers have been trained somewhat by a study of the more attractive parts of plants, attention may be directed to the roots. Lesson plans should include where and how the root grows, how it penetrates and loosens the soil, and what roots and root products are used as food for animals and man.

Fruits and seeds. — The study of fruits and seeds will prove delightful and profitable in any school and with any grade of pupils. The forms of fruits, their color, taste, odor, the times of their maturity, the ways in which they are used; the forms of seeds, their *modes of distribution*, their uses, how they sprout, — all afford the richest and most abundant material for many lessons of high disciplinary and informational value.

Clay modeling. — In connection with the study of fruits and seeds, much can be done to cultivate th pupils' perception of form, and at the same time sat their natural desire to do and to make, by having model fruit and seed forms in *clay*, or similar plastic material.

Plants should be studied as individuals. — But it is not enough to study plants and trees with reference only to their parts and uses, or their aggregate effects in making landscape. They should be studied as individuals, almost as *personalities* of continuous life. Their individual natures, their habitat, which bloom first in the year, which last, which most continuously, — all should be determined by observations made upon the same specimens, week after week.

Roots. — The life of some plants may be traced from the seed up. This may be well done in the winter, by having the pupils plant seeds, at home or at school, in boxes, and observe the changes from the time the seeds first begin to swell.

The pupils of sufficiently advanced grade may be divided into groups at the beginning of the term, and to each group may be assigned a tree, a clump of weeds, a thicket, a tangled fence-corner, or a tuft of grass. They should make careful observations upon the growth and changes in the objects of their study, on the animal life harbored by them, their individual characteristics, etc., and should report and record these observations accurately, at stated periods. Such study may go on profitably at all times of the year, in winter as well as at other seasons.

This plan, carried out in the spirit rather than in the mere letter, will be found one of the most effective for awakening and sustaining such interest, and for giving such familiar acquaintance with nature, as will make the student feel on good terms with every wayside weed, and will enable him through all his life to enjoy the companionship of the myriad forms of mute life to be found everywhere.

The organic and the inorganic. — As the lessons so far suggested are developed there will be various opportunities for observing the differences between the organic, as illustrated by the growing plants, and the inorganic, as illustrated by the rocks and soil. Through the noting of these differences a beginning may be easily made in geology.

Geology. — Much less can be attempted and successfully carried out, in the average school, in geology than in botany. The opportunities for actual observations of a kind suited to pupils below the high school are necessarily somewhat limited — except in a few favored localities — and the work must, therefore, be to a considerable extent informational.

Some of the most important facts can, however, be learned by direct observation.

A Lesson on Soil

I. Special ends of the lesson.
  (1) Training in the observation of the position, structure, and decomposition of rocks.
  (2) To show the relation of the organic to the inorganic. (Training of assimilative powers.)

II. Processes in realizing these ends.
  (1) The teacher, on some of his own "walks abroad," selects, not far from the schoolhouse, a bank, or ledge, with a marked outcrop of crumbling rock, partially covered with soil and growing vegetation.
  (2) On some fit occasion the pupils are taken to this plac preferably without being told beforehand what for.
  (3) Stopping at the place selected, the teacher may sit

ask the pupils to observe carefully the ledge and its surroundings, and tell what they think is worth telling about it. Trained by this time to look closely, they may be able to see for themselves some essential facts — the "layers" of the rock, its breaking off, the crumbling of the pieces, the rotting leaves mixed with the crumbled rock, and the growing plants with their roots fixed in this soil.

(4) If necessary — and it doubtless will be — several trips may be made to the ledge, in order to have all these facts observed and put into proper order and relation. The teacher gives the pupils some other facts about the formation of rocks, their composition, and how they were deposited in the ancient seas, and helps in drawing the inference that the soil everywhere is made of decomposed rock and rotted organic matter.

(5) The series of observations on the rocky ledge, and the talks given by the teacher should at last develop the idea that the difference between the inorganic rock and the organic plants growing upon it is *life;* that the inorganic is built into the organic only as the result of the presence and activity of the *vital factor*.

Other lessons in geology. — Other lessons in geology would include some study of the different kinds of soil, clayey, sandy, loam, and pure humus; of the different kinds of rocks, limestone, sandstone, chert, flint; of cave formation (easily illustrated, in the absence of caves, by the action of acidulated water on a piece of limestone); of wind and water erosion and delta formation; and, if the region affords specimens, of fossils.

Zoölogy. — In following out the lines of observation already indicated, many specimens of animal life will be seen, and some specific work can be done in studying them and their most evident relations to the other facts of nature.

A LESSON ON THE GRASSHOPPER

I. Special ends of the lesson.

(1) Training in observation of insect characteristics.

(2) Showing essential differences between invertebrate and vertebrate animals.

II. Processes in realizing these ends.

(1) The pupils, at the teacher's request, bring in some grasshoppers.

(2) The teacher asks the pupils to look at their grasshoppers and name the different parts or organs. The pupils will readily enough name "legs," "head," "tail," "wings," "feelers."

(3) Then the teacher has the legs counted, asking whether they are on the thorax or the abdomen, pointing to each part as he names it.

(4) After directing observation to the wings, both closed and extended, the length, shape, and rough "shanks" of the hind legs, the antennæ, etc., he asks suddenly and interestedly, "Where is the grasshopper's backbone?" With the answers and suggestions received he builds the idea in the pupils' minds of *invertebrate* and *vertebrate* animals, and asks that several of each kind be named.

Further suggestions. — Additional lessons should include a comparison of the grasshopper with the cricket, the katydid, the housefly, the bee, and other insects. Ants, especially, furnish material for a long series of careful observations.

In the country, material suitable for zoölogical study is as abundant and varied as that for botanical study. In the city, of course, neither kind of material is as plentiful as in the country; but there is enough for some thorough work. In fact, scarcity of material rather an aid than otherwise to thoroughness; for wl there is must be more closely observed, and utilized for as many lessons as possible.

General plan of the work. — In zoölogy, as in botany, a regular order of observation should be followed to secure the best results. The marks and characteristics of the individual specimen; the marks of the genus, or order; the life changes, as, in the case of insects, from egg through larva and pupa to imago; the food of different species, and how it is obtained; the habitat, or range; and especially the use or disadvantage to man, — all these should be studied, and in about the order here indicated.

Throughout all the work the teacher must hold fast the purpose of leading the pupils *to see for themselves*, to be sure of their facts, first-hand.

Making collections. — The pupils should be encouraged to make both individual and class collections of specimens to be mounted and kept; but "collecting specimens" must not be allowed to become an end in itself.

Thorough observation should be insisted upon as precedent to "collecting," and no specimen should be admitted to the permanent class collection which (1) has not been well studied by all the class; (2) is not a good type of its species, or genus; (3) has not been carefully prepared and mounted by the pupil contributing it.

Meteorology. — A phase of nature-study for which opportunity is to be had anywhere, and which is of great value in training the pupils to observe, is meteorology — a study of weather and climate.

Children can, in the second and third year of school, learn the different kinds of clouds and their names — cirrus, cumulus, nimbus, stratus. In case a barometer is not at hand, they can easily learn to judge approximately of barometric conditions by the behavior of smoke and fogs.

Daily observations to be made and recorded. — Observations on the sky, temperature, direction of wind, rain, or snowfall, should be made twice every day and recorded on the blackboard, in permanent blanks ruled for that purpose. It is well to have the observations copied at the close of the day into a record book.

Weather maps, directions for making observations, and blanks for recording them, may be obtained upon application to the Weather Bureau at Washington; and at a small cost any school can secure the necessary instruments, and be recorded as a voluntary station in the Weather Service.

Observations of special periods. — In addition to the regular daily observations, special note should be made of certain climatic and weather periods — equinoctial phenomena, longest and shortest days, totals of cloudy days and of bright days in each month, first snowfall, first frost, first freeze, and any unusual or peculiar weather conditions. Attention can very profitably be given to the moon's phases and appearance, and to the innumerable local "weather signs," — if for no other reason than to aid in the outrooting of many silly neighborhood superstitions, and in the verification of such "weather sayings" as rest upon a sound basis.

Nature-study must be unified. — Hardly too much stress can be laid upon the need and value of planning and using nature-study, particularly the observational, so that as the pupil progresses he will realize the *unity* and continuity underlying all that he sees. It is not difficult to lead pupils whose observation has been well directed, to *grasp together*, into a true correlation, the facts that plants need air, sunshine, and water; that they must have soil to grow in; that this soil is made of crumbled rock and rotted organic matter; that animals require air, sunshine, and water, and depend upon plants, or other animals, for food.

A deeper unity still. — But there is a deeper unity still, a spiritual one, which underlies and informs that spoken of above, and works itself out in all nature, in the highest function that nature, as related to man, can have — the æsthetic and ethical function.

The scientist may have an adequate *rational* comprehension of the parts that air and vapor, sky and earth, trees and rocks, streams and flowers, play as components of a natural landscape; but, after all, the landscape must appeal for the truest and finest appreciation of its highest and most spiritual function — that of beauty — to other faculties than the understanding. It is quite as well that a "yellow primrose should be a yellow primrose and nothing more" to the one who looks at it, as that it should be merely *Primula vulgaris*, and nothing more. Not only should the beauty of color and form in individual specimens of plants, animals, or crystals make its successful appeal to the student, but the pupils should learn also to recognize and appreciate the harmony of the forms and colors that make up a landscape. Even quite young pupils may easily learn to find the best views in the vicinity of the school or their homes, to take pride in them, and, when possible, to preserve and improve them.

Teacher must be an observer and lover of nature. — To make his work effective, the teacher must not only be a close and constant observer of out-of-door nature, training by use his own eye, and ear, and nose, to know and enjoy, but he must also *saturate* himself in the best *literary* interpretations of nature. He should observe, and then read, — read Thoreau, Emerson, Ruskin, Tennyson, Wordsworth, James Thomson, Joaquin Miller, Maurice Thompson, Lanier, Hayne, Burroughs, Grant Allen, — study them, and compare what they saw and *the way they saw it* with what he sees and the way he sees it.

Literature in nature-study. — And having filled himself with this humanizing and poetic element of science, (*it is science*, for the great poets of nature are the most accurate of observers, and the final test of poetry is *truth*), he must give to his pupils to taste of this revealing draught. He should read *to* the lower grades and read *with* the more advanced ones.

From even the masterpieces of literature interpretative of nature, it will be found that pupils of all grades are able to gain as much, proportionately to their power, as they were able to get from their study of nature. It is not expected that they shall see in a plant as much as the trained botanist; neither will they get from a poem or an essay as much as the literator. But we have them observe the plant as well as they are able, and should have them also enjoy the literature to the limit of the same measure. By all effective means they must be brought to see through *things* to the *spiritual essence* of things, realizing that

"The earth is crammed with heaven,
And every common bush afire with God."

QUOTATIONS AND REFERENCES

The following quotations and references are given by way of suggestions, and in the hope that they may tempt the teacher to read widely and select bountifully both for himself and his pupils. Necessarily, the selection of what is suited for use with the pupils must be determined by the teacher, and will vary according to the special subject studied, the capabilities of the pupils, and the local environment.

The teacher should at least read for himself, outdoors if possible, Thomson's "Seasons," Lanier's "Hymns of the Marshes," Ruskin's "The True and the Beautiful," Thompson's "By-ways and Bird-notes," Thoreau's "Walden" and "Excursions in Field and Forest," Burroughs' "Winter Sunshine," Miller's "Songs of the Sierras" and "Songs of the Sun-lands," and the nature poems of Lowell, Wordsworth, Tennyson, and Keats.

Below are some selected quotations embodying the idea that nothing in nature is *commonplace*, however common it may be, and that the interpreter of beauty finds beauty in everything.

"Give me, dear Lord, Thy magic common things,
Which all can see, which all may share.
Sunlight and dewdrops, grass and stars and sea,
Nothing unique or new, and nothing rare."
—*Spectator*.

"Wherever snow falls, or water flows, or birds fly, wherever day and night meet in twilight, wherever the blue heaven is hung by clouds, or sown with stars, wherever are forms with transparent boundaries, wherever are outlets into celestial space, wherever is danger, and awe, and love, there is beauty, plenteous as rain, shed for thee. . . ."—EMERSON.

"If I could put my words in song
And tell what's there enjoyed,
All men would to my gardens throng,
And leave the cities void."
—EMERSON.

"The black eclipse of barren, grainless fields,
Dashed 'neath the heavy-laden cloud;
The vail uplifted to the hard wind yields;
The lowing herds the hedgerows crowd,
And shiver in the fields unplowed."

— GROSS.

Southern Corn.

"I wander to the zigzag-cornered fence
Where sassafras, intrenched in brambles dense,
Contests with stolid vehemence
The march of culture, setting limb and thorn
As spikes against the army of the corn.

"There, while I pause, my fieldward faring eyes
Take harvests, where the stately corn-ranks rise,
Of inward dignities
And large benignities and insights wise,
Graces and modest majesties.
Thus, without theft, I reap another's field;
Thus, without tilth, I house a wondrous yield,
And heal my heart with quintuple crops concealed."

— LANIER.

As much as possible of the work in nature-study must — let it be urged again — go on out-of-doors; and the very first exercises should seem to the pupils more as pleasant walks and outings than as any kind of lessons. Their appreciative attention should be called to the landscape as a whole, they should be led to feel the general out-of-door effect in a way they never felt it before. The following quotations are in harmony with what may be seen in the autumn: —

"The dead grass whispers of the long, long drouth;
The tall, reproachful weeds are brown and dry;
The white clouds rising from the balmy south
Go onward in their journey through the sky.

* * * * * * *

"The mullein stalks, disconsolate and lean,
Look idly on their shadows all the day;
Poor lingering ghosts that haunt the changing scene
Where summer's silent feet have passed away."
—BURNS WILSON.

"When the maple turns to crimson
And the sassafras to gold;
When the gentian's in the meadow,
And the aster on the wold;
When the noon is lapped in vapor,
And the night is frosty-cold;

When the chestnut-burs are opened
And the acorns drop like hail,
And the drowsy air is startled
With the thumping of the flail,—
With the drumming of the partridge
And the whistle of the quail:

"Through the rustling woods I wander
Through the jewels of the year."
—TAYLOR.

"October turned my maple's leaves to gold,
The most are gone now; here and there one lingers:
Soon these will slip from out the twigs' weak hold,
Like coins between a dying miser's fingers."
—ALDRICH.

There is literature for every season, for every month. As the later months of the year draw on, teacher and pupils may look for what is described in these:—

"See yonder leafless trees against the sky,
How they diffuse themselves into the air,
And, ever subdividing, separate
Limbs into branches, branches into twigs,
As if they loved the element, and hasted
To dissipate their being into it."
—EMERSON.

"The beech is bare, and bare the ash,
The thickets white below;
The fir-tree scowls with hoar moustache,
He cannot sing for snow.

"The body-guard of veteran pines,
A grim battalion stands;
They ground their arms, in ordered lines,
For Winter so commands."
— TAYLOR.

"Now, with wild and windy roar,
Stalwart Winter comes once more, —
O'er our roof-tree thunders loud,
And from edges of black cloud
Shakes his beard of hoary gold,
Like a tangled torrent rolled
Down the sky-rifts, clear and cold."
— HAYNE.

As life begins to renew itself under a northward sun, the beauty that unfolds day by day has a sympathetic interpreter in every poet; and much of the finest prose is filled with the inspiration of it. In fact, the writers whose work, in any form, is, and will be, most permanent are those who have been most sensitive to Nature's moods and aspects, and who have succeeded in putting her beauty into their words.

"Blue, full of joy, the sky was, and the sun
Had turned the maple-buds to amber tassels;
The robin, at the dawn, had sung; hard by
Upon the elm, the blackbird's welcome cry
Proclaimed dear Spring's sweet coquetries begun: —
When lo! the Wind's loud trumpet called his vassals
To rear his hasty temples — blurred and gray —
And fan the snowflakes forth in white dismay."
— BURNS WILSON.

"Sing, while the maple's deepest root
Thrills with a pulse of fire
That lights its buds. Blow, blow thy tender flute,
Thy reed of rich desire!"
— MAURICE THOMPSON

"Spring is strong and virtuous,
Broad-sowing, cheerful, plenteous,
Quickening underneath the mold
Grains beyond the price of gold."
— EMERSON.

"I heard the woodpecker pecking,
The bluebird tenderly sing;
I turned and looked out of my window,
And lo, it was spring!

"A breath from tropical borders,
Just a ripple, flowed into my room,
And washed my face clean of its sadness,
Blew my heart into bloom."
— MAURICE THOMPSON.

"The kingfisher is a dash of bright blue in every choice bit of brook-side poetry or painting; he is a warm fragment of tropical life and color left over from the largess bestowed upon our frigid world by one of those fervid periods of ancient creative force so dear to the imagination, and so vaguely limned on the pages of science. . . . Plash! A sudden gleam of silver, amethyst, and royal purple, a whorl as of a liquid bloom on the water, rings and dimples and bubbles, and in the midst of it all, the indescribable sound from the smitten stream, its one chord rendered to perfection."
— MAURICE THOMPSON.

"From the distant tropic strand,
Where the billows, bright and bland,
Go creeping, curling round the palms with sweet, faint undertune,
From its fields of purpling flowers
Still wet with fragrant showers,
The happy South Wind lingering sweeps the royal blooms of June."
— HAYNE.

A few other quotations are given, to illustrate the richness of the literary material which is at the service of the teacher who desires to correlate nature-study and literature, and to show his pupils what close students of nature the best English and American writers have been.

A wise use of such material may easily lead the pupils who like literature but do not like nature-study to see the value of the latter; and may serve also to bring those who are devoted to science but do not care for literature to see the beauty in true expression.

They saw the snowy mountains roll'd,
And heaved along the nameless lands
Like mighty billows; saw the gold
Of awful sunsets; saw the blush
Of sudden dawn, and felt the hush
Of heaven when the day sat down,
And hid his face in dusky hands.

* * * * * *

"They marked the Great Bear wearily
Rise up and drag his clinking chain
Of stars around the starry main."

— JOAQUIN MILLER.

"The various action of trees rooting themselves in inhospitable rocks, stooping to look into ravines, hiding from the search of glacier winds, reaching forth to the rays of rare sunshine, crowding down together to drink at the sweetest streams, climbing hand in hand among the difficult slopes, opening in sudden dances around the mossy knolls, gathering into companies at rest among the fragrant fields, gliding in grave procession over the heavenward ridges, . . ." — RUSKIN.

CHAPTER XI

OBJECT LESSONS (*continued*)

Judgment called into activity. — In the experimental sciences judgment is brought into play constantly *to account* for what is observed. It seems best, therefore, not to introduce the experimental form of nature-study until the pupils have had some drill — full two years are not too much — in the observational exercises. By that time their sense-powers are stronger and more competent to take note of all the circumstances that make the *Why* and *How* easier to answer. And, after all, only the simplest experimental work should be attempted, and not too much of that, below the high school.

Physics should precede chemistry. — In one other respect the arrangement of experimental work should differ from that of the observational. Whereas the forms of work described in the last chapter can and should be carried on concurrently, it is much better to give a pupil some acquaintance with the simple phenomena of physics and their causes, before anything is done in *chemistry*, than to attempt to present the two concurrently. This is true for the one excellent reason, if for no other, that physics deals with matter and energy in the large, and does not require so difficult manipulation or thinking for an elementary grounding in it as does chemistry.

Purpose. — Just as the purpose in observational work is to give the pupil power to perceive and æsthetically enjoy the beauty and usefulness of the objects with which nature is outwardly clothed, so the purpose in experimental work is to enable the pupil to understand and intellectually enjoy somewhat of the causes and laws that underlie familiar phenomena. Only what is fundamental and typical should be chosen as material for exercises, and all illustrations should be the simplest and most familiar. In all experimental work, from the simplest to the highest, the principle should prevail that no apparatus is fully effective unless the *pupils are allowed to work with it themselves.* But the greatest benefit is secured when the pupils are required *to make* as much of the apparatus as they can. In the making of illustrative apparatus the natural *doing* (creative) instinct finds outlet, and a far more intimate knowledge of the fact or principle to be illustrated is acquired than by the use of ready-made material. Throughout the work the teacher should carefully avoid telling the pupils what to look for; they must see for themselves, and, as far as possible, should be led to raise the questions *why* and *how* of their own accord, instead of waiting for the teacher to ask them.

The first exercises in physics should be upon the properties of matter. The subject may be introduced in some such way as shown in the following illustrative lessons: —

LESSON ON IMPENETRABILITY

I. Special ends of the lesson.

   (1) To train the eye to see *fully*.

   (2) To teach that two bodies cannot be in the same place at the same time.

(3) To stimulate thought to discover the value of impenetrability.

II. Processes in realizing these ends.

(1) The teacher sets before the pupils a glass of water with a small bit of cork floating on it, and, handing one of them a clear bottle, asks him to turn it mouth down over the cork and press it well into the water.

(2) The teacher then asks several pupils *what they saw*, and from the various answers establishes the fact that the water did not fill the bottle, but rose only a little way.

(3) He asks, "What is in the bottle above the water?" "Why does not the water fill the bottle?" "Why does it rise in the bottle at all?" And, as a sort of "catch question" (catch questions are frequently valuable), "What is the cork for?"

(4) With the answers to these questions he builds the central idea that two things cannot be in the same place at the same time, and incidentally that air is matter and that it is compressible.

(5) Using, now, the term *impenetrability*, he asks what would happen if there were no such thing. The replies to this will, in any class of bright boys and girls, be varied, interesting, and *valuable*.

LESSON ON ADHESION

I. Special ends of the lesson.

(1) To train the eye to *resee* common happenings.
(2) To teach the fact of adhesion.
(3) To stimulate thought to discover some uses of adhesion.

II. Processes in realizing these ends.

(1) The teacher holds a stamped envelope before the class and asks what makes the stamp stay on. Taking the answers without comment, he asks again what makes the ink stay on; draws a pencil mark across the envelope, and asks what makes it stay on; draws a chalk mark on the board, and again asks the same question.

(2) Using the answer that best suits his purpose — which will most likely be, "It just sticks there" — he will ask the pupils to give other examples in which matter "sticks to" other matter. After several answers have been given, he simply says, "Yes, those are all good; the property that enables things to stick to other things is *adhesion*," and writes the word on the board.

(3) Then he says quickly, "Tell me some uses of adhesion," and again gets many and interesting replies.

In equally simple ways all the properties of matter and their values may be taught and illustrated, and along with these should be taught and illustrated the three states of matter.

Then the pupils should be led to form the concept of energy, and of the world as made up of matter and energy. Phenomena from which to derive these concepts are present on every hand; every fact shows the existence and illustrates the necessity of both matter and energy.

Exercises involving the idea of force may begin with the principles of machines, illustrated by simple apparatus *made by the pupils*. The elementary principles thus discovered should be further illustrated by analyzing familiar machines — pumps, mowers, scissors, threshers, wagons, typewriters, etc. — into their mechanical elements. Such analysis will prove stimulating and helpful in many ways.

Heat may be studied as an illustration of molecular forces, and the first lesson may be carried out somewhat as follows: —

LESSON ON HEAT

I. Special end of the lesson: to teach heat as energy.

II. Processes in realizing the end.

(1) Under the direction of the teacher a wire ring is prepared through which a poker, or small iron rod, wi"

barely pass. A pupil heats the poker to redness, and, upon trial, it is found that the *hot* poker will not go through the ring. The class must see this for themselves, and understand that it is the fact to be noted.

(2) The pupils, if their previous training has amounted to anything, will at once begin to ask *why*, and attempt an answer, almost in the same breath. By guiding the questions, answers, and discussions the teacher builds the *idea* of *expansion*, and then — and not till then — uses the word.

(3) The class are led to understand that this increase in size is caused by something forcing the molecules of iron apart from within, and then are asked to give other instances of expansion due to heat.

Several simple and effective experiments may be made and many everyday illustrations given to make clear the modes of distributing heat — radiation, conduction, convection; and the knowledge thus gained can be strengthened and utilized by calling out explanations of such familiar facts as the packing of ice in sawdust or blankets, the heating of a room by a furnace or stove, the "fluffing up" of the feathers of fowls in cold weather, the wearing of woolen garments in winter, the greater apparent coldness of a bare floor than of a rug or carpet, and so on almost without limit.

Few new facts, many illustrations and applications. Note-making. — The facts and principles taught in these exercises must be few and *fundamental;* but of each fact and principle there must be many illuminating illustrations and applications drawn by the pupils from their familiar experiences. It is admittedly bad to stuff young minds with mere words; it is but little better to stuff them with facts without having them perceive the *meanings* and *relations* of things. Even before regular laboratory work begins, the practice of taking notes — of recording observations, and writing out possible explanations of what was observed — should be introduced and encouraged. Every precaution should be taken by the teacher to prevent note-making from degenerating into a mere writing down of what the pupil thinks he *was expected to see*, rather than what he really did see. Laboratory notes, whether brief or extensive, should cover the following points, and all other matters of importance that may occur in special cases: —

I. Purpose of the experiment.
II. Apparatus used.
III. Manipulations. (Notes should be very full.)
IV. Results observed.
V. Explanations.
VI. Queries, or remarks.
VII. Accidents, if any.

Chemistry. — The subject of physics is a rich and inexhaustible one, furnishing material that can be used from the primary grade all the way up. Chemistry is not so well adapted to use in the lower grades, and only very simple and elementary work should be attempted in it below the high school.

The first exercise in chemistry should, preferably, show the difference between chemical action and physical action, and may follow the suggestions given below: —

LESSON ON MIXTURES AND COMBINATIONS

I. Special end of the lesson: to teach the distinction between a *mixture* and a *compound*.

II. Processes in realizing this end.

(1) A heaping spoonful of flour of sulphur and the same quantity of fine iron filings are shaken thoroughly to-

gether, and the pupils are asked to find some way of separating them again.

(2) With the training they have already had in physics, it may be that they will hit upon either or both plans, — of spreading the mixture on a table and *blowing* the sulphur free from the iron, or drawing the iron free with a magnet. At any rate, the teacher can well afford to wait a day or two or even longer — if the interest does not wane — for the pupils to discover one way or the other.

(3) The sulphur and filings are then placed in a small glass or porcelain dish, and hot water is poured upon them. They *combine*, and the pupils are asked whether the substances can be separated now as before, and what the differences are between this mass and the first. The discussion brings out the ideas that in the first case the sulphur and iron *mixed*, and were still iron and sulphur; in the second, they were combined into a new substance differing from both. Other examples of mixtures and compounds are called for.

Further development of the subject. — A series of exercises should be planned, involving easy experiments requiring the use of very simple apparatus, and illustrating the chemical facts of common experience. Following the first experiment there may be another or two, making clear the difference between elements and compounds; then the constitution of air, the chemistry of combustion, the properties of carbon dioxide, its presence in expired breath, its function in breadmaking and in effervescent drinks, acids and carbonates, a few of the chemical symbols, a few of the simpler reactions shown by equations, one or two experiments showing quantitatively the persistence of matter through various forms, — these and the discussions and original experiments of the pupils growing out of them, will constitute a sufficient amount of work to be undertaken between the fifth grade and the high school.

Some definite plan necessary. — However simple this elementary work is made, or however little of it there is, it should follow some definite plan and carefully avoid the aimless fuddling with bottles and tubes and drugs that too often results from the teacher's efforts to have something "interesting."

Note-making. — In chemistry, as in physics, pupils should make copious notes, and in regular laboratory work they should be recorded under the following heads: —

I. Purpose of the experiment.
II. Apparatus and material used.
III. Manipulations.
IV. Results observed.
V. Reactions $\left\{\begin{array}{c}\text{assumed}\\ \text{or}\\ \text{proved.}\end{array}\right.$
VI. Explanations.
VII. Queries, or remarks.
VIII. Accidents, if any.

Spiritual value of experimental science. — Although experimental science does not offer so much material or so many opportunities for cultivating the æsthetic and the ethical feelings, as do other forms of nature-study, still substance nutritive of higher growth may be drawn from it. The teacher who feels it himself will infuse into his pupils an appreciation of the *beauty of law;* but there is sometimes danger that teacher and students — in advanced scientific work — will come to feel that the universality of law precludes the idea of a

Lawgiver. It ought to be true, and will be some day, that a study of science will lead to the inescapable conviction of the existence of an immanent and beneficent Intelligence.

Nature-study enriches the inner life. — No study is worth anything that does not enrich the inner and higher life of the student, and for this, nature-study is preëminently adapted. Even at its poorest it cannot fail to add much to the resources *within* the individual; and in so far as it does that *it saves.* Nothing is more pitiful than a man or a woman who is constantly and helplessly dependent upon sources outside of self for interest and recreation. When growing boys and girls come to some appreciation of what has been so richly lavished all about them, and to an understanding of even a very few of the revelations of nature, they will not be driven to seek an outlet for inherent and restless activities in the artificialities of society, nor will they yield so readily to the temptations that are found everywhere; there will be far more contentment with isolated living, and cities will not grow so rapidly at the expense of the country. Powell very rightly says, "There is absolutely nothing in our common (rural) school culture to make a child familiar with the earth, the soil, the forces, the life — animal or vegetable — that he must as a farmer deal with. There is no cause for wonder that the drift of our population is away from farms into cities. To be ignorant of the stones and clays, not even to comprehend the simplest operations of nature about us, is to deaden farm life beyond endurance."

The surest and wholesomest way of widening the horizon of life is *to multiply interests* and keep them fresh and eager, and to this end there is no stronger contributory influence than nature-study.

Difficulties in the way. — But there are various difficulties to surmount, in securing good results. Even in graded schools, where elementary science has an assigned place in the primary curriculum, there is often difficulty in finding time and material for carrying on the work properly. Then, again, to be profitable — in fact, to be possible — this work must be oral, no text-book being used below the high school, and to do oral work well requires a fullness of knowledge, a skill in planning, and a vivacity in execution that are not vouchsafed to many.

The complaint of "lack of time," in reply to a suggestion that some work be done in nature-study, comes oftenest and loudest from teachers of the ungraded rural schools, and perhaps more justly from them than from any other class of primary teachers. But when it is remembered what a wealth and variety of material they have at their very doors and how many familiar experiences they have to build upon in their pupils, which city teachers lack, it seems very easy *to make* a little time — once or twice a week, at least, if not every day — for some definite work along the lines suggested in this and the preceding chapter. If the attempt be earnestly made and persisted in for a while, it will be found that the *interest* awakened by the new work reacts upon all other school exercises, giving a keener edge to all effort, and thus *saves time.*

There is some ground for complaint of lack of material, on the part of the city teacher; but a good deal of material may be found even in cities, if it be persistent looked for, and in some of the larger cities, now, school authorities are providing for giving the children frequent trips into the country.

Lack of knowledge the most serious obstacle. — But the most serious drawback in this work is the teacher's lack of knowledge of the subject-matter. This can be overcome only by assiduous study — study not of books merely, but of nature at first hand. But books help, are indeed indispensable.

Jackman's "Nature-study and Related Subjects," in two parts, and his "Suggestive Outlines," will prove most helpful to teachers of any grade, in city or country, who want to make a beginning in observational work. These books give in detail *what* to present and valuable suggestions as to *how* to present it. They may be obtained from the author, Professor W. S. Jackman, Chicago. The teacher will also find a mine of information for himself and much helpful guidance in Bert's "First Steps in Scientific Knowledge," and "Primer of Scientific Knowledge," Lippincott Co. Dana's "Plants and their Children," and Holder's "Stories of Animal Life," American Book Co.; Ingersoll's "Wild Neighbors," Macmillan Co.; Kelley's "Short Stories of our Shy Neighbors," American Book Co.; Wright's "Citizen Bird," and "Bird Craft," Macmillan Co.; and Needham's "Elementary Lessons in Zoölogy," American Book Co., are a few of the many excellent books from which teachers may get knowledge, and directions how to study nature.

The teacher should constantly live by the *law of growth*, remembering that it is also the law of *life*, and that only by keeping his knowledge fresh and usable and adding somewhat to it every day, can he be a "fountain to his pupils, and not a stagnant pool."

Aim of first year
is to teach the primary
concepts, method,
Object meth

CHAPTER XII

GEOGRAPHY

A center of correlation. — Geography is a group of allied subjects rather than a single branch of study, and for this reason it is a natural and easy center of correlation. It reaches from observational nature-study up through geology, meteorology, and astronomy to history and sociology, and all the way it is in contact with many other subjects allied with these. On this account, also, it is adapted to the cultivation of various mind powers — sense-perception, imagination, judgment, and verbal memory. It combines the *human*, and humanizing, element with the best there is in nature-study.

Through a study of geography, in its broadest meaning, the pupil comes to a clearer vision of the relations of the facts of nature both to one another and to man. He learns something of the effect of environment upon man — upon his characteristics and institutions, even upon his ethical creeds and practices, and something of man's modification of his environment and adaptation of it to himself.

These various subjects should be differentiated. — But what is usually called geography and studied in the schools under that name should not be made to include so much, or should, at least, reach but a little way beyond where the several distinct subjects begin clearly to differentiate.

As to what should be included in geography, limited as just indicated, the latest, best text-books on the subject are, in the main, safe guides, although they are deficient in fullness of treatment. The tendency has been to spend too much time upon geography as a separate text-book subject. A course in geography should be arranged to cover the following points:—

(1) Object lessons on natural surface forms of the earth, and representation of these by modeling in the sand pile or on the moldboard; some study of the forces that modify the surface; and the relations of conditions of surface and climate to plant and animal life and to man's needs. This work should, when possible, be done out of doors; but the teacher who has had no experience in making and carrying out lesson plans for such nature-study will do well to make use of some of the various nature-study books now so easily obtainable. One of the freshest and best of these helps is Payne's "Geographical Nature Studies."

(2) The study of a carefully selected text-book of geography, the object being to revive and fix all geographical concepts previously gained, to build up some new ones, and to give a thorough drill in the art of getting information from a map. The pupils should be taught to make maps themselves, both in relief and on the flat. Familiarity with the map idea and what it means should be the aim.

(3) The persistent use of references — maps, gazetteers, cyclopedias, books of travel, etc. — in general reading and in the regular study of history, in all grades from the sixth up. It must be an inviolable rule that every place mentioned in history or general reading shall be definitely located, and some further facts learned about it.

It is not to be supposed that these phases of work are to be sharply discriminated; they should, rather, overlap and grade into one another.

ORAL GEOGRAPHY

Character of earlier exercises. — Much of the earlier instruction in geography may be given in connection with, and as a part of, outdoor nature-study. Some of the most fundamental facts can be learned in this way, incidentally and easily; and there is no need that the children shall know they are studying geography. It had better be called a part of nature-study.

The teacher's aim, in these first lessons, must be to correlate in the pupil's mind the concepts which he already has of land and water, the modifying work of water, the divisions of land and water and their names — as stream, lake, bay, valley, hill, cape, delta, island, etc. — the products of agriculture and manufacture, and thus give the elements out of which the pupil is to construct, later, his images of the earth's modifications of surface and man's relations thereto.

The materials for this oral work lie all about the country schoolhouses; the country teacher, in this case as in most others, is rich in opportunity. In the cities, occasional trips to the country may be taken, if Boards of Education are sufficiently enlightened; and in both the cities and the country much valuable work may be done with the sand pile or moldboard.

The sand pile may be heaped up outdoors in the school yard, or it may be kept in a box or large drawer in the schoolroom, for use as needed on the moldboard. A good moldboard may be made by fastening strips about the width of a lath around the four sides of a table top, or around the top of a large box

In the shallow tray thus formed sand may be placed, and this apparatus will be the next best thing to outdoors, for teaching elementary physiography. Clay, putty, coarse salt, or paper pulp may be used in place of sand.

General outlines first. — The first lesson in geography, like the first in every other subject, should follow the principle that the learner proceeds from general wholes to particular parts. So, the general contour and "lay" of the land about the schoolhouse should be the object of the first lesson — which will not seem to be a "lesson" at all to the children. In this exercise they should learn valley, hill, stream — the *things* and the *names*. At the next lesson the pupils should reproduce what they saw, in the sand pile or on the moldboard; that is, they should model the sand into hill, valley, and stream bed, thus *expressing* and fixing the concepts.

The second outdoor lesson may be along the line suggested by the following plan: —

LESSON ON WATERSHED

I. Special ends of the lesson.

- (1) To build the concepts "watershed" and "drainage."
- (2) To supply thus the material from which to construct an image of river basins and continental surface formations.

II. Processes in realizing these ends.

- (1) Selection, by the teacher, of some suitable stream near by, with smaller tributary rivulets draining a portion of land surface.
- (2) A pleasant walk with the primary pupils, some day at "playtime," to the piece of landscape chosen as a les-

son-whole, and putting them to search for little springs and rivulets to be traced into the larger stream.

(3) A talk about why there is a stream there, where the stream runs to, where the river into which it flows runs to, and why it is well to have these lesser and larger slopes of land to drain away the water.

(4) The modeling of what has been seen, on the return to the schoolhouse, and a little talk about how it looks "out where the big rivers and big hills are."

Other lessons. — Other lessons should include shorelines, erosion, silt depositions and deltas, capes, promontories, bays, inlets, etc., all of which can be seen in the small along streams, or almost anywhere, even in city gutters, after a rain. All these forms should be reproduced by the pupils in the sand.

The sand modeling is, of course, real map drawing of the best sort, for it is done in relief. But along with it, as soon as the pupils acquire a little dexterity in the work, there should be the making of maps on flat surfaces, — smoothed sand, paper, or the blackboard. The first flat map may be a diagram of the schoolroom; the second, another diagram of the room with locations of the stove and teacher's desk, or other objects, marked; and a third may be a map of the school yard, —all *drawn to a scale.*

Drawing maps to a scale. — To begin the work of map drawing on the flat, each pupil should be provided with a foot rule and a lead pencil. For the first lesson, two pupils should be delegated to measure the sides of the schoolroom, and report the result to the class. The figures should be written on the blackboard, and the children should be shown how to lay the rule straight on the tablet and draw a line as many *half* or *quarter* inches long as there are feet in one side of the schoolroom. Then, with the rule placed squarely across the line just drawn, the other dimension is laid off, and the map completed by drawing the other two sides parallel, respectively, with these. The result will, in most cases, be a rather rude figure, but it is the *first map* and it is drawn *to a scale*. This is the beginning, and the work should continue in much the same way, with diagrams of the school yard, the house, barn, and yard at home, sections of the roads and lanes near the schoolhouse, etc., until the pupils are advanced enough to begin the study of printed maps. While they are doing the work in map drawing they should learn easily and incidentally the points of the compass — if they do not already know them — and should learn to give directions and locations by them. This drill may begin with simple and familiar places and objects, and the questions may be such as, "Is the stove in the east or west end of the room?" "Do you go north or south in going home from school?" "Whose is the next house to yours on the west?" And in making maps, the pupils should from the first mark the cardinal points, and learn to show directions on a map. Throughout the course in geography care must be taken to keep map drawing subordinated to the purposes for which it is used; it must not become an end in itself.

TEXT-BOOK GEOGRAPHY

If the oral work has been done well, the pupils have now a considerable store of geographical concepts, with reference to surface forms and maps, and are ready to take up intelligently and profitably the study of a text-book.

Apparatus. — The text-book work should be well supplemented by the free use of globes, wall maps, relief maps, railroad folders, pamphlets advertising towns and resorts, books of reference, and anything else geographical which the teacher may get hands upon. The advance at the end of the year of text-book study should be so marked and thorough that further class work in geography would be unnecessary.

Beginning the use of the text-book. — The transition from oral and objective work to the use of the text-book should be easy and gradual. Following still the principle, "from the whole to parts" — remembering that the older pupil can begin with larger wholes than those used in the oral work — the first lesson for pupils ready to take up the text-book would be upon the globe, the hemispheres as shown in the books, or on a good wall map.

For all teaching in which a globe is to be used, a common, cheap six-inch one, mounted on a wire base, is far preferable in every way to the expensive and complex "tellurian," which, like most maps, offers too many confusing and needless details.

Divisions of the text-book course. — The text-book course will best take up the divisions of the subject in the following order: (1) mathematical geography, (2) physical geography, (3) descriptive geography, and (4) commercial geography. Mathematical geography should be so presented as to give *clear notions* of the great and small circles of the earth, meridians, zones, latitude and longitude, revolution and rotation, phenomena of day and night, and the changes of the seasons. To do this well, it will be found useful to have a globe painted *black* so that parallels, meridians, and other lines may b chalked upon it plainly. Some fixed point in the roo

— as the end of a stick held up by a pupil — may be taken as the sun, a spot on the wall may stand for the polestar, and the changes of the seasons, the equinoxes, and the solstices may be objectively illustrated, by the teacher's moving about the assumed sun, globe in hand, questioning and explaining as he goes. The facts thus learned should be *assumed as known*, in teaching other and later divisions of the subject, and should be used and referred to as often as possible.

The pupils should be not only permitted but encouraged to handle the globe themselves, and fix the essensential concepts in their minds. Occasionally such questions as the following may be given them to work out with the globe before them : —

(1) How many degrees of latitude may there be, north or south?
(2) How many degrees of longitude may there be, east or west?
(3) What city and what rivers are on or very near latitude 0°?
(4) How many degrees wide are the temperate zones? the torrid zone?
(5) Why are the tropics just 23½° from the equator?
(6) If the earth's axis were inclined 20° how wide would the temperate zones be? If it were not inclined at all where would the tropics be?
(7) From what point on the earth's surface should one start, in order to go north one hundred miles, west one hundred, south one hundred, and then find himself just where he started?

Physical geography. — It is in the study of physical geography that the most rational and successful correlation of the nature-study work can be made. What the child learned in nature-study should be freshened and revitalized by being used in physical geography. The subject falls naturally under the following heads: (1) physics of land; (2) physics of water; (3) physics of air; (4) distribution of plants and animals. It is not wise to attempt any but the most elementary work in these subjects below the high school.

While (1) and (2) topics are being studied, sand modeling, or some other form of relief work, should constitute a regular feature of the pupils' preparation or illustration of the subject-matter. Mountain chains with peaks dusted with flour to represent snow, valleys filled with ice and snow to make glaciers; cañons, deserts, plains, and many other exhibits of land physics can be shown on the sand pile.

Evaporation, rainfall, water erosion, the results of freezing on rocks and soils, the drying and cracking of mud banks, may be observed and studied outdoors.

Movements of air as shown by areas of high and low barometer, isobars, and isotherms may be studied on government weather maps which will be sent free, upon request, to any teacher; and rain areas, permanent isotherms, and other climatic peculiarities are shown on a series of physical maps in any good textbook.

Relation of physical geography to political. — The study of physical geography should be directed with constant reference to its relation to descriptive geography. The whole structure of modern geographical science is founded upon the known relations of the physical conditions of the earth to the needs of plants, animals, and man. Pupils should be led to see the dependence of manufacture upon water power and coal supply; of agriculture upon climate and soil; of commerce upon coast indentations, water routes, and fitness of land surface for railway building; of the growth of cities upon all these; in short, the dependence of human growth and human character upon the necessity of constant conflict or coöperation with the forces of nature.

Use of physical maps. — Much use, in all this work, should be made of *physical maps* — maps showing continental reliefs, climate, rainfall, snowfall, mineral products, soil, cultivated crops, distribution of plants and animals, and distribution of human races. Not only should such maps in the text-book, or on the wall, be carefully studied, but they should be *made* by the pupils, both in relief and on paper. No matter how excellent and attractive the book maps are, the pupils ought to have the benefit of reproducing their own knowledge *concretely*.

Pupils should make physical maps. — They should draw clear outline maps, the whole class using the same scale in any given map. The average rainfall or snowfall in various sections of a continent or a country may be indicated both by shading and by the figures showing precipitation in inches; on other maps — always drawn more or less accurately to a scale — isothermal lines may be traced, and the mean annual temperature marked; on others, the chief products, mineral and vegetable, may be shown by glueing on bits of the actual products or their pictures. In such ways the concepts gained by the pupils may be made to take the form of vivid pictures; their knowledge of the earth's surface, and of its local peculiarities and products, will consist of clear and accurate *images* — the best, most reliable form knowledge can take.

Each division should review the preceding. — It is plain that the work as above outlined involves the reviewing, extension, and application of nature-study. The study of descriptive geography should be made to include the reviewing, illustration, and application of what was learned in physical geography; and it will generally be found better, also, to incorporate commercial geography with the descriptive, giving it some special, separate study at the close of the text-book course.

Supplementary matter. — The descriptive text of the book should be supplemented with all available material. A great deal of helpful matter can be secured at very small expenditure of money. Courteous letters to the general passenger departments of the great railways, the coast- and lake-steamer lines, and the pleasure resort and health resort companies, requesting printed matter descriptive of points of interest, will bring rich returns — maps, circulars, pamphlets, profusely illustrated and furnishing abundant material for a detailed study of any part of the country. A good encyclopedia is a great aid in descriptive geography, but thousands of teachers and pupils must do without it. Even one of the almanacs issued annually by the leading newspapers will be found very helpful, not only in geography, but in history and civics, and may be had for twenty-five cents. In most communities, the teacher of geography can, with a little effort, secure a sort of "loan exhibit" of articles illustrating the dress, manners and customs, products, and industries of different places and countries. One pupil may bring a stone ax or arrowhead; another, a Hindu idol; another, a bit of seaweed, or seashells; another, specimens of foreign coins and stamps; others may bring pieces of foreign bric-a-brac, or cloth, or dolls, or books and papers in modern languages. All such things will intensify interest, objectify the study, and in every way invest with a new charm the facts gathered from the book. In schools where money is available for such a purpose, a permanent geographical museum may be provided and will prove of the highest value.

It would be found comparatively easy for teachers in different schools to arrange for a sort of traveling museum, on the order of the traveling libraries now in vogue; or, by a system of interchange of geographical specimens, permanent museums could be built up even in small and poor schools.

Pictures. — The teacher who is really interested in his work can quite readily make a large collection of special maps and pictures, cut from newspapers, stray copies of magazines, and advertising pages of periodicals. These pictures should be mounted upon sheets of heavy paper or light cardboard, cut to uniform size, and should be labeled and classified. Of late years the stereopticon has come into wide use to illustrate every subject of study, and to-day it is an essential part of the equipment of every lecture room. It will be found invaluable in teaching geography, and an occasional "lantern trip" to other places and other countries will do more to arouse interest and fix valuable facts than weeks of class recitation can possibly do. Even the rural schools can secure the low-priced instruments and slides and enjoy the benefit of this mode of illustration. Wherever an opportunity offers or can be made, the community outside the school should share in the instruction afforded by an intelligent use of the lantern.

Clippings. — It will also be found a fruitful plan to clip from various papers that may come to hand, articles of geographical value. These should be labeled, classified, and filed in envelopes. By work of this kind the teacher will not only accumulate a valuable store of illustrative and supplementary material, but will also add much to his own knowledge and form helpful habits of closely noting what he reads, and classifying his information. The suggestions here made will prove quite as helpful to a teacher who has access to reference books as to one who works under more restricted conditions, because in the several ways indicated a great deal of useful matter may be accumulated that cannot be found in reference books, however recent.

Topical outlines. — The *topic method* of study and recitation is especially suited to geography. "Map questions" in the book should, as a rule, be ignored by both teacher and pupils, and the information desired should be gathered according to some regular order of topics, from the printed matter and maps of the text-book, and from the supplementary material available. Below is a topic list, in outline, that can be modified to suit the work in any grade. It is given in a form to use in advanced classes.

GEOGRAPHY TOPIC LIST

- I. Location
  - in what part of what hemisphere or continent.
  - latitude and longitude.
- II. Boundaries and area.
- III. Surface.
  - (1) Land: mountains, watersheds, valleys, plains, capes, etc.
  - (2) Water: rivers, lakes, bays, gulfs, seas.
- IV. Soil
  - composition.
  - fertility.
- V. Climate
  - peculiarities and their causes.
  - temperature — average and extreme.
  - rainfall and snowfall.

VI. Products.
(1) Mineral.
(2) Vegetable (indigenous), including forest growths.
(3) Animal.

VII. Cities and towns
location.
size.
special points of interest.
(1) The capital.
(2) The metropolis.

VIII. Industries and commerce.
(1) Exports and imports
crops.
minerals.
manufactured articles.
(2) Transportation.
1. State and county roads.
2. Railroads
names.
chief cities or towns along routes.
kinds of territory tributary.
3. Water routes: rivers, canals, lakes, etc.
4. Caravan routes.
(3) Communication.
1. Postal facilities.
2. Telegraph lines; cable lines.
3. Long-distance telephone.

IX. Inhabitants.
(1) Number.
(2) Race and nationality.
(3) Manners and customs.
(4) Institutions.
1. Form of government.
2. Educational system.
3. Religion professed.

X. Points of interest.
(1) Natural scenery.
(2) Works of art.
(3) Historic places.

Outline should be developed gradually. — The ingenuity of the teacher will devise adaptations and variations of this list, to meet special needs; the only point to be insisted upon is that the study and recitation of lessons in descriptive geography shall be by correlated topics.

It is better to develop the outline gradually, a few topics being given at a time. Most of the principal points may be first illustrated, in order, by a study of the school yard, then by a study of the neighborhood about the school.

SUGGESTIONS FOR CLASS WORK

Spelling. — Spelling drills should be frequent in the geography class, and correct pronunciation should be constantly insisted upon. The pronouncing vocabulary in the back of the book should be used for every lesson. In connection with this, the meanings of the names of the different countries and states may be searched out.

Outlines, essays, reports. — It will be found very profitable to have pupils make out special outlines of various countries, and give oral reports or write essays upon features of particular interest that deserve fuller investigation than can be given in the ordinary work. Such themes as "Countries contributing to my Breakfast," "Yellowstone Park," "Lookout Mountain," "Regions represented in a Fruit Stall," readily suggest themselves.

Games. — Geography games have been arranged upon the same plan as the game of authors, and will be found pleasant and useful as an occasional diversion. A "geography match," conducted much as a spelling match, helps greatly to fix places, names, resources, etc., in memory. A variation of this is to send one pupil to the wall map, pointer in hand, while another pupil rapidly names rivers, mountains, towns, to be pointed out *unhesitatingly*. If either hesitates he is to take his seat.

Tracing routes. — One of the best means of fixing *places* and *directions* in the minds of the pupils is the tracing, from memory, of routes by water or rail, or both, from one point to another — as from Duluth to Venice, from Seattle to Marseilles, from St. Louis to the city of Mexico. Such an exercise compels a panoramic view that is pretty sure to result in a fixed image.

APPLIED GEOGRAPHY

There is no need of studying text-book geography for more than a year, if for so long. But all that is learned in geography up to the time the text-book is laid aside, should be fixed, *applied*, and made real by use in the study of *history* and in *general reading*. It must be the set rule of teacher and pupils that every place and every event met with in reading or studying, must be located, either from memory or by reference to a map. The "new geography" is based on the idea that knowledge of a place is not worth while unless something has happened or is happening there. A good deal of this supplementary material may be read in class. A special weekly feature of school work should be the reporting of *current events* of interest, and while such a report is being made by one pupil another may stand at the wall map and quickly indicate the place of each occurrence mentioned.

Geography and literature. — Geography and literature may be correlated very successfully, each being made to act and react on the other to the great advantage of both. If the teacher be fortunate enough to have the use of a reference library, he should make out a list of books or articles in papers and magazines to be read, in whole or in part, by the pupils. Or he may plan a course of reading for them to follow at home after they have finished the regular school work in geography. The following representative list of books will illustrate what is meant: Lummis's "Some Strange Corners of our Country," Murfree's "In the Tennessee Mountains," Miller's "Songs of the Sierras," Irving's "Alhambra," Taylor's "Views Afoot," Holmes's "My Hundred Days in Europe," Butterworth's "Zigzag Journeys," and the series of Geographical Readers, issued by different publishers. Lists of most excellent supplementary matter will be found in the Natural Advanced Geography.

Geography and patriotism. — One aim that should guide the broader teaching of geography in advanced classes is the cultivation of *patriotism.* A strong component in the love of country is a knowledge of the country's size and resources, and its beauty and sublimity of natural scenery. Such knowledge not only deepens pride in one's own land as great in material things, but quickens the ambition to have her become greatest in spiritual things — a moral force in the world's progress.

CHAPTER XIII

HISTORY

Definition and illustration. — History is, in its broadest meaning, *everything that has happened;* in a narrower sense, it is everything that has happened *through human agency*. By the first definition, the development of the earth from the nebula to its condition to-day is history; by the second, only those changes that have occurred since man's advent upon earth, and that are due to his reaction upon his various environments, constitute history. That which makes history interesting and valuable, whether it be geological or political, is the human element, the relation of events to man, — to his wants and his progress. In a very true sense, history is biography with a large background. It is as biography almost wholly that our national history should be taught, in the first four or five grades.

ORAL HISTORY

The lessons, through these grades, would best be only occasional, and should be oral. The subject should be presented chiefly by biographical stories, and should be confined to the *facts* of history, leaving the underlying causes — the *philosophy* of history — and their relations to the present, for more advanced work.

Telling better than reading. — These stories would much better be *told* than read to the children. Telling, if it be done at all well, with any life or play of genuine interest, makes the personal element more real and vivid to the hearer, and enables the teacher the better to make adaptations of the story to the special needs of his pupils. The German pedagogists consider the ability to make and tell stories a prime qualification in a teacher, and German normal schools give special attention to the cultivation of the story-telling power. But the exercises may profitably be varied occasionally by reading from some one of the excellent books prepared especially for this way of teaching history. Eggleston's "First Book in American History," "Stories of American Life and Adventure," by the same author, and "Great Americans for Little Americans" are admirable examples of this class of books, and are well suited not only to be read to the pupils, but also to furnish the teacher, occasionally, with the matter and style of his stories. What is true of every other branch is especially true of history — that the teacher needs to have a clear view of the subject *as a whole*, and of the principal subdivisions and their relations to one another. He must plan his "talks" or readings carefully so as to give to his beginners in simple form the nuclear facts, in biographic stories, of each great epoch of American history. It is not to be understood that he shall give, in this oral work, any outline of history to be learned or followed by the pupils; he follows the outline himself, guides his own work by it.

Pictures a great aid. — In teaching history, as in teaching geography, an abundant supply of pictures will be greatly helpful. History, for its effective assimilation, makes heavy demands upon imagination, and pictures especially aid this faculty. There should be portraits, pictures showing the dress, the houses, the manner of life, customs, and peculiarities of the people told or read about. In history teaching, too, the lantern is of great value, and the school that is provided with one and a good supply of slides can do much more effective work than if these are lacking.

Exact geography not needed in primary history. — Although it is very essential to a clear conception of history that *events*, *dates*, and *places* be closely linked together by as many ties of association as possible, yet the work in primary history is begun so early that strict attention to either localities or dates is not easy. Nor would it be particularly advisable, even if it were possible; for the boy and girl from six to eight years old rather prefer the indefinite "one time" and "somewhere."

Exact chronology to be preserved. — But at the same time, care should be taken to have all the stories and narrations follow the exact chronological order of events. So much depends not only upon the *manner*, but, as well, upon the *order*, in which any subject is presented, and built into the mind of the learner; and this is especially true in history. But to follow the chronological order it is not necessary to require the learning of dates, during the first two years of elementary history teaching.

It seems better, pedagogically, to begin with Columbus and make the first presentation of the facts of our history in chronological order, than to begin with the history nearest in time and place to the pupil. In the first teaching of geography, the material is abundant, close at hand, is familiar to the children, and adequately illustrative of wider geographic truth. It is not so in history; the primary pupil cannot readily comprehend that the events occurring in his own daily experience, or even those illustrated by monuments or historic spots in his neighborhood, are *history*. And even if he could so comprehend them, he would lack power to understand them in their relations to historic development. Because an event is near a pupil in time and place it does not at all follow that it is near him, or can appeal to him, *psychologically*. The stories of persons and places, of events and deeds, far away in time and space, have the flavor of the *myth*, and will therefore be enjoyed. And besides, to unfold history from the beginning greatly simplifies the *chronology*, which is so important.

First lesson. — The first lesson in oral history may be upon Columbus's first voyage of discovery, and may follow the plan suggested below.

Plan of Lesson on Columbus's Voyage

I. Ends in view in the lesson.
  (1) To impart the *facts* of Columbus's voyage.
  (2) To show something of the condition of human knowledge at that time.
  (3) To arouse an interest that shall demand a continuation of the narrative.

II. Processes in realizing these ends.
  (1) The telling of the story, briefly and interestingly, (*a*) describing Columbus's early life, (*b*) showing why he wanted to make this voyage, (*c*) giving what people said of him and his plan, (*d*) describing how he was at last enabled to start, and (*e*) carrying the account up to the time when his sailors were ready to throw him overboard and start back.
  (2) Showing portraits of Columbus — among others, the one on the Columbian half-dollar — and pictures of the ships and sailors.
  (3) Allowing a few minutes for questions on the incidents told, care being taken not to answer any questions on the *outcome* of the voyage or as to whether the sailors really got rid of Columbus.

Second lesson. — The second lesson should begin with a quick oral reproduction of the first story by some one or more of the pupils. The narrative should then carry the discoverers to their first land, and describe the landing, the conduct of the natives, and the work of the explorers up to the time of sailing on the return trip. The teacher should make it a point to stop the story at some specially interesting incident, so as to sustain continuously the desire of the pupils to know "what next?"

The experiences of Columbus easily make three or four lessons, and these may be illustrated by the pictures on the Columbian stamps, in addition to other pictures.

Group-centers for further lessons. — The Period of Exploration and Discovery is very rich in material for story after story. The facts are grouped around the Cabots, Magellan, Ponce de Leon, De Soto, Raleigh, Hudson, and others, and should be presented in chronological order — but without naming dates. In what may be called the "biography course" in history, all the periods should be gone over, and their leading characters presented.

Culture and ethics. — The impressions can be deepened, and the great value of history as a *culture* study can be availed of even in these earlier lessons, and much more so in advanced classes, by introducing poems and songs that embody or illustrate historic facts. A special part of every teacher's preparation for teaching history should be the searching out and classifying of the *literature* of the subject. In this "side light" matter should be included interesting and true anecdotes of persons, especially of their childhood and youth. These anecdotes if properly selected and rightly used, will be found rich in the *ethical* or character-making content that constitutes one of the chief values of history.

Observing special days. — Here another plan suggests itself, which is suitable for use in almost all grades, and for the whole school as well as for the classes in history — the plan of celebrating certain days. These should for the most part be birthdays of people who have made history, but may occasionally be anniversaries of events. In the latter case, the personal element should be made especially prominent. Not only statesmen and the heroes of our great military and naval exploits should be remembered and their deeds taught in this way — they usually receive rather more than enough attention — but also great explorers, inventors, philanthropists, in short, those who, irrespective of sex or condition in life, have done great things for human comfort and happiness.

There must be due regard for the relative value of events and characters; only to the most important need a whole day, or even a considerable part of one, be given. "Special day" programmes are best carried out, usually, as a part of the opening exercises of the school. The following programme is given by way of suggestion; it is adaptable to other characters and to any kind of school. All participants in the programme are to be well drilled beforehand.

PROGRAMME FOR AN EDISON DAY

I. On the stage or rostrum of the schoolroom is placed a large picture, or pictures, of Edison. If possible, several pictures should be exhibited, illustrating phases of his career from newsboy to millionaire.

II. Pupils appointed for that purpose give brief, spirited descriptions (1) of his boyhood, (2) of the beginnings of his ca

(3) of his present life and work, and (4) of his principal inventions, *their uses* and benefit to society.

III. Pictures of some of his most noteworthy inventions and of his home and laboratory are passed about, and opportunity is given the pupils to ask questions or to give other facts.

IV. The teacher closes the exercise by holding a quick, animated oral review, in which are skillfully brought out the points in Edison's life that show his development of purpose and character.

Stories which are told or read by the teacher should be reproduced by the pupils, orally at first, both orally and in writing later. A reproduction should usually immediately follow the telling or reading of a story; and in reviews, which should be rather frequent, several stories should be combined in reproduction.

History by events. — During the fourth and fifth years in school, the whole subject may be presented again, but this time by *events* rather than biographically. For example, this second going over will begin with the Discovery of the Western World, and will proceed through the Voyages of Exploration, the First Settlement in America, etc., in chronological order. In the first going over, incidents were grouped about a center of biography; in the second, the incidents are grouped together to constitute an *event*, and the personal element is not so prominent. The acquisitive capacity of the pupils having increased as they advanced, they should be given additional facts regarding each event, and should have some drill in clustering what they know about a few important dates. Very few dates should be learned during these two years, but those should be thoroughly fixed in memory.

At the age of nine or ten, also, the pupils know enough geography to begin to localize the events they learn in history. The wall maps should be used for this purpose, and should be used as dates are — rather sparingly and only to fix the more important events. But from this time on, in the teaching of history, care must be taken to *fix the associations* of three things at each step — the event, its time, and its place.

History and language lessons. — The oral lessons in history, throughout, should be used as the basis of much of the language work. There should be not only frequent oral reproductions, but what has been learned should afford the material for many written stories, in which the pupils should be permitted the greatest freedom of expression, putting down their own selections of important facts and items of interest about people and places. It cannot be too faithfully remembered that every act of expression serves to intensify the corresponding *impression.*

Text-books introduced. — In the fifth year a suitable elementary text-book may be introduced, for convenience, although it is not necessary, and the work can be better done without it, if the teacher carefully plans and prepares for each exercise. The lessons during the fourth and fifth years may occur two or three times a week.

Local history. — At this stage of advancement and from now on the pupil can be profited by some study of local history. Interest has been by this time aroused in history as history, and there will be an appreciation of persons and events that are objectified by local monuments, statuary, parks, or natural scenes of historic interest. As illustrations may be named Fort Ancient, in Ohio; Blue Licks, in Kentucky; Harpers Ferry; the

Lincoln monument, in Springfield; the Alamo; the portraits and memorial tablets of eminent persons, to be found in almost any town in the United States.

It is greatly to be desired that the teaching of local history shall stimulate local pride, so that all places of historic interest shall be appropriately marked and the traditions that cluster about them shall be carefully and correctly preserved. There is hardly a community in this country, new as many portions of it are, that does not have some spot more or less noted as the scene of occurrences a well-preserved account of which would greatly enrich the real inner history of the country. In many localities the material is abundant enough to justify the organization of local history clubs, and such clubs and the history classes of the district schools could be of much mutual help. In few places is the *local* history as well known as the history of the Revolution or the Civil War — and such should not be the case.

Current events. — About the same time that local history is taken up the teacher should begin to direct the pupils' attention to *current events*, or contemporaneous history. Further suggestions under this head will be given later in this chapter; the point to be emphasized here is that the young people should begin to realize that history is continuous and *alive*, and that their own lives form a part of it.

The pupils are now, in their sixth school year, in possession of a tolerably close-fitted and well-grasped series of facts, and are ready to begin the study of the average grammar school history text-book. They have acquired, in right chronological order, the leading facts of their country's history; they should now have those facts set in relative proportion, in historical perspective, and should give more attention to relations of cause and effect.

A history scheme or outline. — The use of the textbook should be to aid an extensive — rather than an intensive — study of the subject; and this study should follow a scheme or outline designed by the teacher to give a clear and connected view of the whole subject and of each part in its relation to the whole. The method is still analytic, or analytico-synthetic; the difference of presentation is in the lesson-wholes selected. The early life of Columbus and a part of his voyage constitute a sufficiently large lesson-whole for an oral exercise with a primary class. A bird's-eye view of the whole field of American history is a proper lesson-whole for the first lesson of a class ready to take up the regular text-book work. The subject should be presented as a whole, by the teacher's developing, through suggestive questioning, some such outline as follows: —

Epochs[1]

1^1 Colonization.
2^1 Nationalization.
3^1 Renationalization.

These terms should be written on the board, as expressing the ideas advanced by the class in reply to questions by the teacher. The discussion of these — their meanings, what general events each includes, and how each epoch grows out of the preceding and leads to the next — should constitute the first exercise.

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[1] The method here used, of grouping the events of American history about three great centers, originated with Dr. R. H. Holbrook, and is fully developed in his admirable "Outlines of U. S. History."

Boundary events and dates. — The second lesson should include a reproduction of the first, by the pupils, and the affixing of boundary events and dates to the epochs, by the teacher. At the close of the second lesson the outline will stand thus: —

Epochs

1^1 Colonization	from the voyage of Ericson, 1000, to the Declaration of Independence, 1776.
2^1 Nationalization	from the Declaration of Independence, 1776, to Hayes's Administration, 1877–81.
3^1 Renationalization	from Hayes's Administration, 1877–81, to the present time.

The third lesson will begin with a quick, sharp drill (see p. 85) upon these epochs, and their boundary events and dates, and this drill should continue until the teacher is satisfied that each pupil in the class can give epochs, events, and dates, quickly and accurately from memory. If there is time, after this drill, the first epoch may be taken up and analysis of it begun. The work will continue in this way throughout the term. Reviews and drills should be frequent and thorough, and should result in the instant readiness of the pupils to reproduce *understandingly* all of the outline they have had, and to fit into the general scheme any part of the history so far learned. The outline should not be overloaded with details nor crowded with too many dates. It is to be remembered that this study of the subject is to be extensive rather than intensive. If the topical scheme suggested above be developed it will fall into the following subdivisions, which may be carried as far as the teacher thinks is warranted by the needs and abilities of his class.

TOPICAL OUTLINE OF AMERICAN HISTORY

(Epoch I.) 1^1 Colonization, 1000–1776.

- Periods
  - 1^2 Exploration and Discovery
    - Ericson, 1000,
    - to
    - La Salle, 1682.
  - 2^2 Settlement
    - Raleigh's Colony, 1585,
    - to
    - Settlement of Georgia, 1733.
  - 3^2 Consolidation
    - "Stamp Act" Congress, 1765,
    - to
    - Declaration of Independence, 1776.

(Epoch II.) 2^1 Nationalization, 1776–1877.

- Periods
  - 1^2 Separation
    - Declaration of Independence, 1776,
    - to
    - Final Treaty, 1783.
  - 2^2 Confederation
    - Articles of Confederation, 1777,
    - to
    - Adoption of Constitution, 1789.
  - 3^2 Federation
    - Adoption of Constitution, 1789,
    - to
    - Hayes's Administration, 1877–81.
    - 1^3 Union
      - 1789
      - to
      - Civil War, 1861.
    - 2^3 Disunion
      - 1861
      - to
      - Lee's Surrender, 1865.
    - 3^3 Reconstruction
      - 1865
      - to
      - Hayes's Administration, 1877–81.

(Epoch III.) 3^1 Renationalization, 1877 to present time.

This topical outline is given merely as an illustration of the method of handling the subject in advanced grades, and with the full consciousness that there are other lines of cleavage in our national history which are as distinctly marked as these, and which may be used as well as the ones here shown.

Using the outline. — The point to be insisted upon is that the teacher shall present the subject topically and in perspective, giving the pupils a comprehensive plan of the whole, into which details may be fitted as the work goes forward. So much of the outline as is given above should be so fixed in the minds of the pupils by frequent and thorough drill, as to become their a, b, c of history. At every step the pupils should be required to develop parts of the outline themselves, setting events in chronological order and according to their relative importance. Only the main heads should be given by the teacher, and even these should not be given outright, but as far as possible developed in discussion by class and teacher. The pupil's self-activity must be evoked, and this cannot be done by giving them fully made outlines.

Overlapping. — It will be noted that the periods *overlap* in events and boundary dates, instead of being strictly consecutive, as in some other outlines of history. The arrangement given here seems the more natural, because, as a matter of fact, the periods of history do overlap, and are not set off from each other by rigid demarcation.

The last epoch is not subdivided into periods, because it is difficult to hold in perspective history so recently made, and it was thought better to leave the arrangement of the latest periods to the teacher, who can give the events such a grouping as will best illustrate and emphasize his view of their relative value. As an aid in fixing that general grouping of events which it is so necessary to remember in order to have exact knowledge, the scheme shown below is very useful. The making of these schemes by the pupils may be required as a part of the review work. The arrangement is applicable in general history or in that of a single country.

DATES	EVENTS				
	POLITICAL	SCIENTIFIC	LITERARY	RELIGIOUS	EDUCATIONAL
1844	Texas applies for admission to Union.	Telegraph operated between Balt. and Washington. Wells uses gas as anæsthetic.	New England School of Poets.	Methodist Church split on slavery. Murder of Jos. Smith.	First Normal School established at Albany, N.Y.

The making out of schemes under the heads here shown will strongly emphasize a fact that needs emphasis — and that is, the *political* history of a country is but one phase of its history, and not always the most important or interesting one. A glance through the older text-books of history shows that when these were written, wars on land and sea and the acts of statesmen and legislative bodies were considered to be all of history worth studying. But now we know that wars, political quarrels, and laws are only the outward symptoms and incidents of true history. This idea is well set forth by Professor McMaster, when he says, "No American would seek to dull the luster of our military and naval annals, to forget the names of the men who led us to victory on land and sea, or cease to draw lessons of patriotism and devotion to our country from the story of heroism and sacrifice made by tens of thousands of men who laid down their lives that we might be what we are. But he should be distinctly given to understand that the lives and deeds of the heroes of war do not comprise, but are comprised in, the history of the United States. The thing to be impressed on him is that these great inventions and discoveries, and the leading inventions and discoveries of the nineteenth century, have bettered the condition of civilized man everywhere, and are contributions to human welfare made by America. We are a people animated by the highest and noblest ideals of humanity, of the rights of man, and no history of our country is rightly taught which does not set this forth. Above all, it should be so taught as to destroy that baneful belief that we have degenerated from our forefathers. . . .

"The motive for discovery; the effect of discovery on the geographical ideas of the time; the reasons why the four great maritime powers of Europe came into possession of our country; why the Dutch acquired the Hudson; why the Spaniards occupied our Gulf coast, the English, the Atlantic coast, and the French, the Great Lakes and the Mississippi; and the profound and lasting influence this particular arrangement of European settlers had on our later history, — these are the things it concerns us to know, rather than the doings of particular men and the Indian wars of particular colonies."

Other uses of scheme work. — Such scheme work, with suitable modifications, has much value in studying and teaching history so as to show both the concurrent and consecutive development of the various trends of national progress. For example, one column may be made to show the inception and growth of the federalistic idea, the events of our constitutional history; another column would show the lines along which science has grown, and so on. And the placing of these columns together in the scheme would show the condition of the whole field at any given date.

Causal relations in history. — The causal relations of events should be made prominent in the teaching of history in the higher grades. In most instances these relations are plain and easy of comprehension in the light of the experience and observation of even young students. The relation of cause and effect constitutes one of the strongest forms of the association by which things are held in memory. The study of causes also demands the activity of the judgment, or relational faculty; and thus two of the most important powers of the mind are disciplined by the right study of history. Such a study of history also prepares the pupil for entering, later, upon the interested and intelligent study of sociology, a science which is largely dependent upon history for its inductions. And it is through an understanding of the causes of events, directly linking the past with the present, that the study of history can be vitalized and infused with interest for the student who has passed out of the *myth epoch*, and is beginning to enter into the reflective stage of growth. Unrelated facts are dry and distasteful, and nowhere more so than in history. Every event of importance enough to be studied at all should be studied in relation to its causes and its results.

Intensive history study. — In the last year of the high school and in the college there should be some intensive study of history. Some one period, covering not too long a time, should be selected and studied in detail. Origins, causes, effects, relations with other periods should all be carefully and closely studied. In such work access should be had to at least the more important original documents or to facsimile copies of these.

Geography in history. — Geography is the background of history, and it is necessary all the time to keep pupils in mind of the fact — self-evident as it seems — that events occur *somewhere* as well as *somewhen.* One of the greatest faults to be found with the old teaching was the isolation of these two subjects throughout; history was not localized, and geography was carried in some mental compartment carefully separated from everything else, as if it were valuable purely for its own sake. The older text-books on history had few and poor maps, wall maps and atlases were seldom or never used in studying or reciting history, and consequently notions of places where historical events occurred were very hazy.

The proper localizing of history not only fixes it, but teaches geography better than any study of geography alone can do. Text-books of history should be selected which have numerous and clear maps, and frequent use should be made of atlases by the pupils while preparing a lesson. In recitation, suitable wall maps should be at hand for ready reference, and should be used freely by the pupils in reciting. If wall maps are, for any reason, not available, then the text-books should be unhesitatingly opened, and their maps used in recitation.

Map drawing. — In addition to such study of maps, the pupils should be required to prepare, as a part of their history work, special maps of their own drawing.

These may be drawn to a specified scale, on suitable sheets of uniform size; or, preferably, they may be prepared on outline maps, which are procurable from any school publishing company, and the use of which will secure greater neatness and uniformity and save much time. For example, the outline map of the hemispheres may be used first, and each pupil required to bring in, after a week's study of the text-book, one of these maps, filled out in colors, to show Genoa, Spain, Columbus's route across the Atlantic, and the region of his first landing upon this hemisphere.

While studying the explorations of the Cabots, De Soto, or La Salle, the routes followed should be traced upon outline maps of North America, as the study proceeds, and these maps should be turned in as a part of either regular or review work. In the same way maps should be made to show the acquisition of territory, the sites of famous battles, — the position of opposing armies being marked in solid lines of different colors, while routes of marches are shown by broken or dotted lines, — the changes and growth of parties, the increase of population, and, in short, nearly every kind of historic fact that can be graphically represented. Care should be taken to print in all important dates, *on the face of the map.*

This sort of map work is very valuable in the general study of history, but is still more so in the intensive study of the subject, — the careful working out in detail of some definite portion of history.

Current history. — Bearing in mind what history is, the teacher should make provision for regular exercises in current history. These should occur about once a week, and can and should be made the "point of contact" between what the pupils have been studying and the movement of events that they see going on about them daily. Even in this the teacher will have to be on guard to keep from making the current history simply a separate and additional study. It must be handled so as to show the connection between past and present, in what ways the present is better or worse than the past, and what lessons the past and present both give by which we may profit. Too much care cannot be exercised to keep out of these reports of current news all the mere gossip and scandal which fill so many columns of the daily paper. Personal gossip (except in rare cases), scandal, murders, suicides, accidents, etc., *are not news.* Such things, therefore, should not be reported on "current history days" in school. There are many excellent publications of low cost, designed especially to furnish real news, genuine current history, to teachers and pupils, and one or more of these papers should be in every school. About the best antidote to the sensational newspaper is appreciation of really important events, and this appreciation it is certainly one of the functions of the school to give.

Assigning various news topics. — A good plan is to allot the news, under different heads, to several groups of pupils. Thus, one group will be expected to bring in the home political news, another the foreign political news, another the scientific news, another the educational, another the literary. Sometimes each pupil may be requested to bring in any bit of news that interests him most, or that he thinks is most important. The teacher should see to it that the reports of events are couched in good language and contain something worth telling. Special encouragement should be given to the bringing in of "good news" — that which shows the best side of human nature, deeds of noble charity or self-sacrifice.

It is well to have the pupils, in this reporting of news, note carefully the times and places of dispatches, and by whom sent. Interest and knowledge may be increased occasionally by tracing out the cable routes along which comes foreign news; and when, as sometimes happens, news of an event is received at an hour *earlier* than the time of its occurrence, that fact may be used as a practical illustration of "longitude and time."

Making and preserving clippings. — A part of every school's equipment for teaching history should be a classified collection of clippings cut from papers and magazines. Pupils can add much to such a collection, and will appreciate its value in proportion as they have helped to form it.

All reports of current news, as well as the recitation of the regular history lessons, should be made with maps in full view. Geography is learned in this way more effectively than in any other. The time to fix in the mind a locality — town, river, mountain, etc. — is when we are interested in some event which has happened or is expected to happen there.

Fixing dates. — To teach dates so that they shall be retained is a difficult matter, for the reason, chiefly, that there are so few real *associations* clustering naturally about a date — a mere group of figures. It is unwise, in the first place, to attempt to teach many dates. The "boundary" dates and events of the epochs and periods should be closely associated and carefully *drilled* upon until they are in the mind to stay. This is true, also, of the dates that mark other turning points or growth-impulses in our history. Other dates may be learned as needed, but the pupils should not be required to retain them all. Encouragement should, however, be given to the developing of a strong and ready memory for dates.

"Correlative" dates and events. — A good device — psychologically good because it strengthens association — is to "yoke" two or more dates, with their corresponding events, taking one date in the *present*, the other in the past. The teacher may say, for example, "Just fifty years ago to-morrow an important event occurred in our history; find out what it was, and tell me, for a part of to-morrow's lesson."

History in training expression. — In school work, everything should be made to contribute something to training in expression; and to this end history can be fruitfully used. The outlines, made by the pupils, of the different periods and their subdivisions, are valuable forms of expression of logical thought and selective power. These outlines should be presented in class and fully discussed and amended in the course of the recitation, and finally copied in permanent form by the pupils. The subject of history is also very rich in materials for essays, and a written discussion of some especially interesting topic should be a frequent feature of the work. The essays should sometimes be prepared beforehand, and sometimes they should be written in class upon topics assigned quickly at the beginning of the recitation period. In either case, the teacher should criticise the work upon its mechanical neatness, historical accuracy and completeness, and rhetorical finish, The training secured by such exercises will be found valuable in acquiring accuracy and readiness of written expression.

Debates. — History abounds in "debatable questions," too, and debates should be a more or less frequently required form of class exercise. The pupils should be encouraged to give full and free expression to their own thoughts about some point upon which differences of opinion may exist. The themes should be assigned beforehand, usually, and the terms and methods of the forensic combat should be arranged by the teacher. This sort of work will always be found to add much zest to the study of history, and thus increase the ease and diminish the time of learning it.

History as a culture study. — The use of history in expression training brings out much of its value as a *culture* study, but by no means all. History must be used as a subject of especial and distinctive value in cultivating the literary taste and the ethical nature.

There should be as much reading as possible, in connection with history study, — not reading of the textbook as a reader (a most pernicious practice), but reading of history "side lights." Old books of travel and description, — Dickens's "American Notes," for example — essays, stories, — such as "Hugh Wynne" — poems, songs, based on historic facts should, when possible, be brought into requisition to illuminate and vitalize the knowledge acquired by regular study. Whatever may be said against the historical novel as a form of pure literature, it has been found of much value from the pedagogical standpoint; its use is markedly helpful in the study of special times and events, and it is good for the teacher that there has been in recent years a marked recrudescence of this variety of fiction.

History and ethics. — All through the study of history, emphasis should be placed upon its value in forming character — in furnishing ideals of individual life and in cultivating sentiments of lofty patriotism. Even in advanced history there should be much biography, taught and learned as biography, and from it may be drawn most effective and abundant help to purposeful living and noble deeds. Through the right teaching of history and biography the public school — of whatever grade — can do much toward discharging its especial function of *training for citizenship*.

Deeds of heroism, not only in the larger arenas of life, but in the quiet round of everyday duty, should be dwelt upon in the study of eminent men and women through whose service, public or private, our country has been made greater. The young should be led to see that real greatness does not consist alone in deeds of valor upon the field of battle, or in distinguished statesmanship, but that there must be other forms of excellence before these can be — there must be sacred family life, the love of home, individual integrity, and devotion to the claims of *immediate* duty. Along with those who have led armies and parliaments must be placed others who have directed the forces of industry, and others still who have wrought with brain and hand and conscience, at whatsoever they found to do, in rearing the fabric of the nation. Out of what others have done and the way they have done must grow in each fresh mind the *ideals* of life and duty, and out of these ideals must come the constraining forces that shall shape growth into true comeliness.

CHAPTER XIV

CIVICS

WITHIN the past decade and a half there has been a great civic awakening in this country, and as one of its results the study of civics is now a requirement in the common school curriculum of many states.

Function of public education. — The rightness and necessity of such requirement are evident, when it is remembered what the public schools are for — to make good citizens. In so far as education at public expense fails to build well the citizenship of the state, it so far fails to justify itself as public education. It is most fitting, then, that in the public school there should be specific teaching and studying of civics — the science and art of citizenship.

General method in teaching civics. — Although civics touches history most intimately, and depends upon it for explanations of the use and development of civic privileges and functions, yet the subject should not be taught historically at first. The beginnings should rather be like those of geography, observational and inductive, using the material nearest at hand.

Facts and principles to be illustrated. — And the material for illustrating the fundamental facts of civics is abundant in every locality and easy of comprehension. The sources of authority, its particular forms, and the need of obedience to it, are all essential facts in civics and should be made the basis of the earliest oral teaching.

It might well seem, at first sight, that the teaching should begin with the authority of the parents in the family, and with the mutual rights and obligations of the home. But, although the home life should be drawn upon freely for illustrations of the need of government and of the rights and privileges of the individual, yet home government has not the same origin and sanction as has the authority of the state. Moreover, the exercise of authority varies so in different homes that examples of home duties, privileges, and punishments, widely differing in character and purpose, are sometimes confusing, and lead to undue and undesirable airing of inner family life.

The school the starting point. — The authority of the school stands on middle ground between the peculiar authority of the home and that of the state, and may well serve as the basis of a series of oral lessons, which should begin in the second reader grade.

LESSON PLAN IN ORAL CIVICS

I. Special end of the lesson: to teach the *source* of authority in our form of government.

II. Processes in realizing this end: questions to develop the idea.
  - Who was your teacher before I came?
  - Would he have a right to come in here now and tell you what to do?
  - Would I have had a right to come in while he was your teacher and tell you what to do? Why?
  - How did I get to be your teacher and have the right and duty to direct this school?
  - How did the trustees get the right to appoint me as teacher?

Why could not any man or any three men in the district appoint me as teacher?

Who voted for the trustees? When and where was the voting done ?

Could the people in the next district have voted for trustees for this district? Why?

Would I have the right to teach here unless *all* the trustees of this district had said I might?

These questions from the teacher and the discussions to which they will lead will begin to develop the central idea of the *source* of civil authority, and will incidentally arouse interest touching numerous other subjects. Thus, out of the first lesson will arise questions of what voting is, who may vote, local self-government, majority rule, the responsibilities and duties of those who are in office, and the nature of contracts. All these find ample illustration in the civil government of the school district, and should be discussed in the same way as is suggested in the lesson plan outlined above. Difficult technicalities should be avoided, and the interested questioning of the pupils will show the teacher how far he can profitably go in any one direction.

Essentials of good citizenship. — The essentials of good citizenship are a knowledge of the source of authority and of the machinery of government; a moving and effective consciousness of personal duty ; and a habit of prompt obedience. The knowledge is easy enough to impart and acquire; but the sense of personal and individual responsibility, and the habit of ready obedience to law, both of which are so indispensable to the safety of the community and the state, are matters of slow growth and much persistent training. This training should begin at the first contact of the pupil with the school environment, or rather the training he gets at school should be simply a reënforcement and extension of that which the best home life gives.

Even in the oral instruction in the lower grades, pupils may be well impressed with the idea — so necessary to the best citizenship — that the teacher, the trustees, the superintendent, and other officers, are not put where they are and given the powers they have merely to carry out their own arbitrary ideas of what should be done, but that each officer or group of officers simply represents, and is *responsible to, higher authority*, — the teacher to the trustees, the trustees to the superintendent or the people, or to both. Intelligent adults, even, quite frequently commit the absurdity of indulging personal enmity against the particular official who executes law against them.

Another form of responsibility. — Another form of responsibility should be dwelt upon also, in these beginnings of the subject — the responsibility of worthily and completely discharging *all the duties* of an official position. Illustrations of the value of faithfulness in the discharge of duty by those in positions of trust may be drawn from the games of the children. They very readily appreciate the work of an energetic umpire, or captain, or partisan contestant. And it is easy to bring them to a realization of the value to the community of the trustee, or superintendent, or teacher, who uses the opportunities his position gives him for bettering the community.

When the material nearest at hand has been pretty well acquired and assimilated — when the facts with which the learners are most in contact have been examined and understood, and made to contribute something to the growth of civic feeling — then facts a little more remote may be taken up.

In towns and cities the familiar policeman may well be made the starting point of further lessons; in the country, the sheriff is perhaps the best known embodiment of civil authority. Such duties of these officers as the pupils know of can be discussed in a series of lessons, which will necessarily touch many things, and awaken much curious questioning on the part of the children.

Taxation. — After the pupils have learned somewhat about the public officials with whom they are most acquainted, — how they came to be in office, and what their duties are, — the question of *taxation* and the use of public money may be taken up. These matters may be introduced in some such way as follows: —

LESSON PLAN ON TAXATION

I. Ends of the lesson.
  (1) To define taxation.
  (2) To show the necessity of taxation.

II. Processes in realizing these ends: questions developing the ideas.
  The teacher, taking a bit of money from his pocket, says,
    This is my money; how did I earn it?
    Who paid it to me?
    Where did he get it?
    Was it his money?
    Did your fathers or mothers pay any of it?
    Did everybody pay the same amount? Why?
    Do people *have* to pay money that way every year? Why?
    Who makes them pay it?
    Who says how much they shall pay?

It will be readily understood that this lesson plan, like the others, is meant to be suggestive; the questions can indicate only a general line of thought and the manner of its development. In a lesson like that just outlined the teacher will have to give much information, using the questions not for "drawing out" so much as for the purpose of quickening the receptivity and assimilative power of the pupils. It will be well to use, illustratively, some tax-receipts; they will aid in *concreting* the subject.

The questions of taxation will furnish material for several lessons. The specific ends for which public money is spent, who spends it, who orders it spent in the several ways, and the responsibilities attendant upon paying out such money, may all be presented so plainly and simply that the pupil will readily seize the points with interested comprehension. In towns and cities it is very easy to lead the young people to see what direct benefits they personally secure from the expenditure of the money their parents have paid as taxes, and in what ways the benefits may be made greater.

Legislation. — The work in civics cannot have gone so far without having several times involved the idea of *law* and lawmakers. The inquiries will have arisen naturally, Who said things should be thus-and-so — that this school should be taught? that taxes should be levied? that they should be spent as they are? In answering such questions there will be found abundant opportunity to impress upon the pupils the necessity for having intelligent, honest, painstaking lawmakers, and to show who is to blame for giving ignorant and dishonest men a chance to make laws. Here, again, illustrations may be drawn from the experiences of the pupils in the home and the school. From lawmaking it is natural and easy to return, with enlarged conceptions, to a consideration of the execution of the laws by the several officials known to the pupils, and by others of whom the teacher can tell them. The talks upon these topics will lead to a realization of what law is, who makes it, and why it is necessary. The teacher can impress the fact that if everybody could behave himself there would be need of but few laws.

Obedience. — Out of such discussions will arise the subjects of lawbreaking, and the necessity and rightness of obedience to law. Here the familiar facts of courthouses and jails will demand attention and furnish matter for many oral lessons, in which the teacher will not fail to make it plain that jails are only for weak people who have not self-control enough to keep out of them.

Suggestions on oral work. — Throughout the oral drills the teacher must keep steadily in view the few simple and fundamental purposes for which they are given, and must check any tendency to allow the talk to drift off into needless details, and irrelevant questions that evaporate interest rather than fix it. All oral work has to be guarded in this respect, but especially so in civics, on account of the many ramifications of the subject.

There should be much more acquisition of facts than attempts at philosophizing about them; "whys" should be few and should involve matters within the easy grasp of the learners.

This oral work may extend over three or four years. Some of it may be done incidentally, but most of it should be done in regular lessons, occurring once or twice a week. By the time the pupil reaches the higher grammar grades, or is ready for the high school, he will be pretty well acquainted with the objective side of civics — he has learned that final authority and responsibility, in our form of government, rest not only in the people, but in the individual; that law exists to make life and property secure; that every one owes obedience to law and service to commonwealth and common health; and that the state may, under certain conditions, take property and even life. So much all American boys and girls should learn and learn well by the age of thirteen or fourteen. Before that age is reached they should have formed also some habits of good citizenship — should have learned to make practical application of the knowledge gained. For example, they should have regard for public property as such — for the school buildings and furniture, for the trees along the street, for the streets themselves, being careful not to throw trash upon sidewalk or pavement. They should learn to see in its true light the wrong of trespassing upon others in any way, by interference with property, by infliction of bodily injury, or by wounding the feelings, as in *teasing*. They should be trained to apply their civic knowledge in school government, being permitted to govern themselves as a pupil-body, just so far and just so long as they can show their ability to be self-governing. This plan has been put into successful use, and is worth almost any amount of theoretical teaching of civics.[1]

The American school an Americanizer. — Many communities in the United States are congested with a foreign population, not more alien in birth and language than in knowledge of and sympathy with American institutions. Such a population is a grave menace to the integrity and best success of American government. It is hardly possible to assimilate the ignorant and indifferent adults; effort must center upon the children, and they can be Americanized only through the assimilative power of the public schools. In some places it has come to be a matter of self-protection and self-preservation to the community or state, to insist on constant and specific teaching in the rights and duties of citizenship, and in the machinery of government. It is to help in this process of creating a sturdy civism that the flag and flag salutes, mock elections, and various objective illustrations of popular self-government are given such prominence in many public schools to-day. To the same purpose, also, do various civic experiments with the young contribute, such as that of the "George Junior Republic," in New York.[1] Since relatively so few of the pupils in the public school ever go beyond the grammar grade, the necessity is plain for beginning the oral work in civics early, and carrying it regularly through five or six grades below the high school.

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[1] See Principal Ray's articles in *School and Home Education* for January and February, 1899.

Text-book work. — The study of a text-book need not be begun until the pupil has entered the high school, the precise time of taking it up being a question for the teacher or superintendent to decide in view of the special circumstances of each school. It is much better that advanced work in this subject be not begun until the pupils have a pretty good general knowledge of United States history.

Topical method. — Like history, civics should be studied and taught, in the advanced grades, mainly by the topic method.

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[1] See *Review of Reviews*, Vol. 13, and *McClure's Magazine*, Vol. 9.

The following arrangement of topics has stood the test of actual teaching use: —

OUTLINE OF CIVICS

- 1^1 Theoretical politics.
  - 1^2 Citizenship.
    - 1^3 Definition of "citizen."
    - 2^3 Kinds of citizens.
      - 1^4 As to nature of their citizenship.
        - 1^5 Native.
        - 2^5 Naturalized.
      - 2^4 As to suffrage.
        - 1^5 Voters.
          - 1^6 Who may vote (Federal and state requirements).
          - 2^6 Duties.
        - 2^5 Non-voters.
          - 1^6 Who may not vote.
          - 2^6 Duties.
    - 3^3 Problems of citizenship.
      - 1^4 Property qualifications for suffrage.
      - 2^4 Educational qualifications for suffrage.
      - 3^4 Protection of the ballot.
      - 4^4 City politics.
  - 2^2 Analyses of constitutions.
    - 1^3 The Federal Constitution.
      - 1^4 History of formation and adoption.
      - 2^4 Provisions or terms.
        - 1^5 As to the legislative department.
        - 2^5 As to the judicial department.
        - 3^5 As to the executive department.
    - 2^3 The state Constitution.
    - 3^3 The city (or village) charter.
- 2^1 Practical politics: the machinery of government.
  - 1^2 Political parties.
    - 1^3 Purposes, or functions.
    - 2^3 How organized and maintained.
    - 3^3 Brief histories of the leading parties, and study of essential points in their platforms.

- 2^2 Primary elections.
  - 1^3 Purposes.
  - 2^3 By whom held.
  - 3^3 When and where held.
  - 4^3 Manner of holding.
  - 5^3 Legislation concerning.
- 3^2 Conventions.
  - 1^3 As to membership.
    - 1^4 The "mass" convention.
      - 1^5 Purposes.
      - 2^5 How and by whom held.
      - 3^5 Mode of procedure in.
    - 2^4 The "delegate" convention.
      - 1^5 Purposes.
      - 2^5 How constituted.
      - 3^5 Kinds.
        - 1^6 Delegates instructed.
        - 2^6 Delegates uninstructed.
  - 2^3 As to territory represented.
    - 1^4 The county convention.
      - 1^5 Purposes.
      - 2^5 By whom called.
      - 3^5 How organized.
      - 4^5 Mode of work.
    - 2^4 The district convention.
    - 3^4 The state convention.
    - 4^4 The national convention.
- 4^2 Committees.
  - 1^3 The county committee.
    - 1^4 Purposes.
    - 2^4 How created.
    - 3^4 Mode of work.
  - 2^3 The state central committee.
  - 3^3 The national committee.
- 5^2 The campaign.
  - 1^3 The use and abuse of money.
  - 2^3 The influence of the press.
  - 3^3 The "stump."
  - 4^3 Political clubs.

- 5^3 The parade.
- 6^3 Personal work.

6^2 Elections.

- 1^3 Election of school trustees.
  - 1^4 When and where held.
  - 2^4 By whom held: officers of election.
  - 3^4 Manner of holding.
  - 4^4 Certifying the election: making returns.
  - 5^4 Installing the elected official.

    (Election of other officers of county, state, and nation may be discussed in the same way.)

7^2 Legislative bodies.

- 1^3 The school board.
  - 1^4 How organized.
  - 2^4 Powers and duties.
  - 3^4 Mode of working.

    (Other legislative bodies may be similarly treated, in order. Special study should be made of the *organization* and mode of work of the state and national legislatures, and particularly of the *committees* through which so much work is now done.)

8^2 Judicial bodies: courts.

(Beginning with the nearest or most familiar court, the various tribunals may be studied, as to the court officials and their duties, and as to the general character of business in each court.)

9^2 Executive processes.

Adaptability of the outline. — The outline is intended to cover the whole field, and to be modified and used according to the needs or opportunities of particular schools. Thus with a strong advanced class the study can be carried deeper into details than with less competent workers; in cities, city charters and problems of city politics will receive much more attention than in country schools. Some topics may be omitted entirely, and others may be introduced. The outline can be adapted to a class just taking up the study of the text-book, or can be expanded to meet the needs of students of collegiate grade.

In high school classes it is desirable to introduce a few fundamentals of political economy, a study not usually given a place in the high school curriculum, but which has a good right there, and even lower down. No text-book should be used, and the work can be done in the civics class, either incidentally or in a few regular weekly lessons. The lessons should include the discussion of (1) production, (2) distribution, (3) consumption, and the more important topics growing out of these, such as (*a*) labor, (*b*) money, (*c*) necessaries and luxuries. In most of these matters a boy or girl of twelve or fourteen can see the essentials about as clearly as more advanced students, and a few lessons upon the subjects suggested above may enable many a pupil, grown to manhood without opportunity of further study in school, to go safely in the rough times of strikes and lockouts.

Machinery of government. — But in every case, the teaching of civics should result in a clear knowledge of the *machinery* of government, and especially of that which is *extra-constitutional* — that which has resulted from carrying constitutional requirements into practical effect, but which was not provided for or contemplated in the national or earlier state constitutions. For example, party organization, the huge mechanism of state and national conventions and their controlling committees, and the powerful committees of Congress, should be well studied. Much of their work, value, and danger can be understood even by pupils just entering the high school.

It is a valid criticism upon much of the teaching of civics that it is concerned too exclusively with the *theory* of government, with analysis of — usually — only the Federal Constitution, and does not give adequate attention to the methods of making the theory effective. Every election demonstrates that a man may know the provisions of the Constitution thoroughly, and yet not know how to cast a legal ballot.

Apparatus in civics teaching. — In civics, as in every other branch, the teaching should be concrete and objective. Mention has already been made of illustrative material that is available in the primary work. In advanced work all this may be used again, and much more may be introduced. The teacher should carefully classify and preserve numerous clippings, such as calls for conventions, election notices, special messages and vetoes from governors and president; copies of ballots, of various legal writs, proclamations, passports, — all of which appear from time to time in the daily or weekly papers. When the state or national legislature is in session, copies of bills may be obtained, and the reports of legislative proceedings should be studied. Every boy and girl of twelve should know the *personnel* of state and national cabinets and courts, and should be stimulated to a wholesome interest in public men and their work. Enough has already been said to indicate the importance of "current events" in the teaching of civics; the value of real news is as great in this subject as in history, or even greater.

Object lessons. — Such experiments as the George Junior Republic, adverted to earlier in the chapter, have been remarkably successful in the civic training of boys and girls taken, in several instances, from the midst of conditions most unfavorable to the development of healthy citizenship. The plan of holding model elections has been successfully tried in some city schools, and may be used in all. Voting booths are put up, ballots prepared, judges and clerks appointed, and all the legalities of an election are illustrated in a most practical way. To secure the best results from such work it should be made as realistic as possible, — primaries should be held, candidates for some actual school office should be nominated, questions of the day should be embodied in platforms, and the balloting should be done seriously and genuinely.

One or more grades may also be organized into a model legislative body, and bills may be introduced, debated, amended, passed, and submitted for signature or veto. The bills should be brief and simple, and embody something in which the pupils are genuinely interested. The legislative forms followed should be those of Congress or state legislature, and the imitation should be as exact as possible.

History and civics. — Advanced civics is a study of high value in the training of *judgment* — the power to draw inferences, to perceive relations, and to reach conclusions. Civics taught and studied so as best to realize this value is really political history. In the history class it will be studied mainly as history; in the civics class, mainly as development of political institutions. But the prominent causal relations should be made clear in both branches, and the two subjects should be closely correlated. The growth of political institutions and methods, both constitutional and extra-constitutional, is a fascinating thing to study, and should be made prominent in civics teaching. As aids in this part of the subject, such books as Cooper's "American Politics," Willoughby's "Rights and Duties of American Citizenship," Johnston's "American Politics," Nordhoff's "Politics for Young Americans," Strong's "Our Country," and Henry's "Voice of the People," will prove of high value, and should be in easy reach of students and teacher throughout the course. Also, copies of original documents, such as the Bill of Rights, the Declaration of Independence, the Articles of Confederation, and the material found in the "Old South Leaflets," will be of great use, both in civics and in history. In beginning classes, such books as Forman's "First Lessons in Civics," Peterman's "Civil Government," Brooks's "Century Book," and Guerber's "Story of the Thirteen Colonies" and "Story of the Great Republic" will be found very suitable for side reading.

In all his teaching of history and civics the tactful teacher will, as a matter of course, avoid the obtrusion of any partisan bias into the discussions.

Patriotism. — But knowledge of the theory of government, of the history of its development, and of its practical processes is, like all other knowledge, worth nothing unless it passes up into *feeling* and thus becomes *kinetic*. The real ends of civics teaching are (1) a clear knowledge of the processes of our institutions, (2) an adequate perception of the opportunities and duties of citizenship, and especially (3) a strong and efficient *motive* to the use of opportunity and the discharge of duty. It takes all these to make up serviceable, practical *patriotism*. Knowledge is the source of patriotism, but *feeling* is its informing spirit.

The pupil must be made to *feel* his citizenship, its wonderful privileges, its exacting duties, its demands for the best that is in him. He must feel himself a part, not only of the community, but of the state and nation, — a factor in their growth or degeneracy, a sharer in their glory or their shame. He must be so taught that as he grows into the full functions of citizenhood he will come to a deeper and ever deepening realization of the truth that place hunters, oath-breaking officials, corrupt courts, and time-serving legislators are as genuinely foreign foes — foreign to real Americanism — as they that would flaunt their war flags in the face of this nation. He must feel that his duty at the ballot box is as imperative as on the battlefield, and that he can serve his country even more faithfully with the secret ballot than with the bayonet.

The nation is the individual multiplied. — The teacher may not forget that his work is with the individual pupil, and that the state or nation is only the individual multiplied, — that national character is simply the sum of individual characters. Indeed, the nation falls somewhat below the sum of all its parts, and hence the greater the need of lifting the individual standard as high as possible. We call ourselves a self-governing people; but we cannot make good the claim unless we are *self-governing individuals.* The youthful citizen must learn to project himself into the national consciousness, and feel shame if the nation does what he would be ashamed to do, feel pride and honor if the nation attains to the ideals toward which he himself is striving. The sense of *personal responsibility* must be quickened, so that the citizen shall say of his government, "Why do not *we* . . . ?" instead of — as is so often the way — "Why do not *they* . . . ?" when he wonders with his neighbor why the saloons are not closed, or the streets swept, or franchises controlled.

Geography and patriotism. — The teacher has many resources upon which to draw in arousing in his pupils a sense of participation in, and responsibility for, their country's growth and glory. Even that which is least essential to the real greatness of the country — its mere physical bigness — may be so impressed upon the imagination as to rouse pride in the sense of common ownership. A realization of the achievements and possibilities of material development should be made to deepen the consciousness of responsibility for the right use of resources so limitless.

History and patriotism. — The culture value of history cannot be too often or too strongly urged; rightly taught it can be made to quicken every noble sentiment, and none more so than patriotism. Let the boys and girls get clear ideas of what splendid men and women have done to make this country what it is, and they will thrill with pride to have a share in the heritage of glory, and with ambition to add to its luster. The country's triumphs of *peace* must be thrown into higher relief than is usual in school text-books on history. Not the successful wars of the country so much as the nobler facts of peace maintained, and growth in peace, should be constantly pressed upon the young citizen.

Geography and history should be specific cures of provincialism, and to be rid of this is to grow in the true and broader patriotism.

"Patriotic days." — All young people — and most old ones — need frequently to have sentiments objectively symbolized. For this reason it is well to have, occasionally, some special ceremonies, such as the observance of "flag day," and of one or two of the more important national or state holidays. Birthdays of eminent statesmen may also be celebrated. The exercises should, in every instance, be simple, suggestive, and interesting, quickening civic pride and stirring emulation.

Literature and patriotism. — In civics teaching, too, literature has its own place as a prime force in reaching and stirring the feelings of loyalty and civic pride. Our literature is full of appeals to the patriotism of our citizens; in it is embalmed many a deed of public valor and of quiet sacrifice of self for the common good. And there is a great store of purely civic literature of the highest order, from which the teacher can draw without limit — public documents, speeches and addresses of statesmen who have thronged our legislative halls, and the state papers of those who have held high places in times of national crises.

The teachers of the country have the keeping of the nation in their hands. As they are faithful to their trust, so will their pupils grow into men and women the integrity and purity of whose private character shall be builded into the national life.

CHAPTER XV

PHYSIOLOGY

Value of the study. — The chief value of the study of physiology, as it must be carried on under usual limitations, is informational rather than disciplinary or cultural. And it would be difficult to exaggerate this informational value; out of a knowledge of the human body as a machine, of the causes of disease, and of the conditions of health, will come a realization of the sacredness of the body and of life, and an intelligent coöperation with natural forces in the improvement of sanitation and the suppression of disease.

The lessons of modern sanitary and medical science all teach that nearly every form of disease is due to a weakened vitality, to uncleanliness, or to some specific disregard of the simplest hygienic laws. It is now also more clearly recognized than ever that it is the duty of the individual and of the community to raise the vitality of the race through cleanly and hygienic living — through *physical righteousness.*

It is looked upon as a disgrace to an enlightened community, to-day, to permit an epidemic of typhoid fever, or diphtheria, or any other ailment that is known to be a "dirt disease." There are many disturbances of health that are due to the ignorance or carelessness of the individual; and people need to be ***ashamed*** of being sick, instead of, as is too generally true now, looking upon sickness as a "providential visitation" which they should humbly and almost thankfully accept.

If the young citizen be taught the causes of disease, the care of his own health, and his duty to his neighbor, he will grow up to keep not only himself and his premises clean, but his street and his town.

Use in physical education. — But the knowledge of physiology should not be turned to preventive uses only; the abnormal phases of life must not receive too much emphasis. A knowledge of physiology is of great value in positive physical education, in building up the sound body which the sound mind is to use, through all the years of its delightful activity, as its ready instrument.

In teaching the subject care must be taken to make such intimate personal application of it to each individual that not only shall he have no excuse of ignorance for any physical sin, but shall take pride in a healthy body as a part of his capital in life, as a marvelous machine which keeps itself in repair.

Throughout the course, but especially in the lower grades, the greatest emphasis must be laid upon hygiene — the art of *preserving*, or *creating*, health. No opportunity should be lost of showing the connection between vigor and sanity of body and vigor and sanity of mind. Even quite young pupils can be brought to understand the necessity for pure air, cleanliness, warmth, the upright position; and they can readily perceive the relation between these and clear thinking, good lessons, and personal comfort. The result of a right teaching of the subject everywhere would be to make the coming generations stronger-hearted, stronger-lunged, clearer of brain, cleaner of blood, lither of limb. The teachers of the country have this matter very largely in their hands. But they must not forget that *knowledge alone* is not protective — many a physician is a physical wreck because his knowledge was not protective. Knowledge must be transmuted into feeling, into motive, and the individual must realize that to break a physiological law is *to sin* — that all natural law is God's law.

Reverence for natural law. — Physiology, as a form of nature-study, affords especial opportunities of showing the fixedness of natural law, and the wisdom of obedience to it. In no other subject can there be found such *personal* illustrations of the value of a right regard for law, or of punishment for its violation.

SUGGESTIONS FOR PRIMARY WORK

Oral objective instruction. — Instruction in physiology should begin in the first grade, in a very simple and elementary form, and should, of course, be objective and oral.

For this work the *children themselves* and their daily functions of eating, drinking, sleeping, playing, constitute all the apparatus needed. In many cases it will be found advisable to begin with such simple matters as distinguishing between right and left hand, the names of the fingers, heel, instep, elbow, wrist, etc. The point for the teacher to hold in mind is, to begin a little short of where the child's previously accumulated knowledge ends.

Lesson topics. — The teacher should carefully plan a series of lessons, suited to the advancement of the pupils, which shall cover the topics here suggested: —

I. GENERAL ANATOMY.

- (1) The *head*, *trunk*, *extremities*, and the more obvious subdivisions of each.
- (2) *Bone*, *muscle*, *skin*, *blood*, with names of a very few of the most important bones and muscles and their *mechanical* adjustments and functions.
- (3) Names and locations of the chief vital organs.
- (4) Names of the sense organs and such of their parts as may be made objects of direct observation.

II. GENERAL PHYSIOLOGY.

- (1) Functions of the body as a whole — *to grow* (nutrition), *to work*, *to form the basis of mind.*
- (2) Functions of special organs, — as teeth, tongue, hands, lungs, and the several sense organs.

III. GENERAL HYGIENE.

- (1) When, what, how, to eat and drink.
- (2) Care of the teeth, hair, and nails.
- (3) Hygiene of sleep, rest, exercise.
- (4) Hygiene of the eyes.
- (5) Prevention of disease, — necessity for cleanliness; avoidance of overheating and colds.
- (6) "Emergency hygiene," — what to do for one's self or others in case of accidents, such as stings, burns, cuts, sprains, fractures.
- (7) The hygiene of nerve excitants, such as alcohol, tobacco, and various other drugs.

These topics, it is evident, cover about the whole ground; they should be carried only so far into detail as the time and the advancement of the pupils will admit. The topics here given should all be discussed, in some form, by the time the pupils are ready to take up text-book work in the subject, which need not be until the first year of the high school. Not too sharp a discrimination is to be made, in this elementary teaching, between the three phases of the subject—anatomy, physiology, hygiene.

The teacher may hold the distinction as clear as he likes in his own mind—and it should be quite clear there—but he need not and should not harass the learners with the logic of the subject.

Some anatomy should be taught.—Although the teaching in the primary grades should be mainly in hygiene, yet even the beginner can learn intelligently somewhat of anatomy, and needs an elementary knowledge of it in order to understand the facts of hygiene.

External anatomy is best learned with the pupil himself as an objective illustration. The general divisions of the body, the skin, muscles, bones, joints, are all readily learned in simple lessons on the pupils' own bodies.

Inner anatomy may be illustrated sufficiently, in country schools, by the usual contents of the lunch boxes. For example, the leg of a chicken furnishes material for several lessons on bone structure, joints, tendons, structure and attachment of muscles, skin, and hair (feather) follicles. Under the too frequent method of grinding physiology out of a text-book, a pupil might have chicken or beef every day, and not know he was eating muscle.

On the farms children have frequent opportunities to observe the anatomy of the nutritive system in animals killed for food; in cities plenty of illustrative material may be got from any meat shop. Much has been said about dissecting, and the matter, so far as primary work is concerned, seems still to be undecided by any great weight of authority on either side. But if all arguments are given their due weight, the conclusion is against regular dissections in primary grades. All the knowledge needed by pupils in these grades can be easily gained without any more anatomizing in the school than an occasional cutting up of some part obtained from the home kitchen or the meat shop.

General physiology. — In the primary grades only such work in physiology proper is necessary as will give a very general knowledge of the functions of the more important and easily observed organs. It is enough for the pupils below the high school to know broadly the functions of the sense organs, the muscles, the skin, and the nutritive system. What they do learn they should learn clearly and definitely; but they do not need to learn minutely.

Hygiene. — The work in hygiene, however, should be careful and pretty thorough. It is not possible that reasons can be profitably given to children for all the hygienic rules that they should learn and practice; somewhat must be given on authority.

It should be the aim of the teacher to train the pupils into hygienic *habits*, so that the boy or girl ready to enter the high school will almost automatically do those things that are conducive to health.

The subjects that should receive especial attention are eating and drinking, care of the eyes, preservation of the teeth, cleanliness, exercise and rest, and taking cold.

To illustrate the suggestions offered in the preceding paragraphs here follow some lesson plans: —

LESSON PLAN ON JOINTS

I. Ends of the lesson.
    (1) To cultivate acquisition through observation.
    (2) To stimulate to further observation.
    (3) To give some knowledge of the joints of the body.

II. Processes in realizing these ends.

(1) Have a pupil stand before the class, and bend and straighten his arm a few times. Other pupils may, of course, do likewise if they wish.

(2) Ask — clearly and interestedly — the following or similar questions: —

In how many places can John bend his arm, between shoulder and wrist?

In how many between his shoulder and first knuckles?

How many bends can he make between his shoulder and the end of his middle finger?

Why can't he bend his arm between his shoulder and elbow, or between his elbow and wrist?

Where are some other *joints* in the body?

Are there any joints between the head and the hips?

Where?

What if we did not have a joint at the elbow? or at the knee?

What if we did not have any joints at all?

(3) Show the hip joint of a chicken, or beef. The pupils are led to point out the enlarged ends, the rounded, smooth surface, and the hard, elastic covering. Questions are answered.

(4) The class is dismissed, after being asked to be ready next time to tell what joints can bend in more than one way.

Other exercises along this line will fix the terms "flexion," "extension," "ligament," "cartilage."

Illustrations may be drawn from familiar machines. It should be shown that the body is a machine, with levers (bones) and ropes (tendons), and that all these need care as do the parts of any other machine.

The series of lessons on joints may be fittingly closed by a special calisthenic drill.

LESSON PLAN ON THE USES OF THE TEETH

I. Ends of the lesson: The same general ends as before, and to fix and make definite the pupil's knowledge of the teeth's functions.

II. Processes in realizing these ends.

(1) Procure, beforehand, an incisor and a molar tooth, human or other.

(2) Show these to the class, letting the pupils see them plainly, and question as follows: —

Which of these is a front tooth? which a jaw tooth?

What differences do you see between them? (Bring these out clearly as to root and crown.)

Have you teeth like these?

Why are the front teeth shaped thus?

What do you do with your jaw teeth?

Why do the *molar* teeth need more roots than the *incisor* teeth?

What else are the teeth good for, besides biting and chewing? (Bring out how they assist in talking and in preserving the shape of the face.)

(3) The pupils are asked to be able to say, next time, whether a cat has the same kind of jaw teeth as a boy, and to try to find out *why* there is a difference, if there is one.

LESSON PLAN ON EXERCISE

(This will come after some informational lessons on nutrition, the uses of the blood, and the muscles.)

I. Ends of the lesson: the same general ends as before, and to instruct in the hygiene of exercise.

II. Processes in realizing these ends.

(1) Ask the children to sit perfectly still [illegible] minutes by the clock. They will hardly ac

(2) Then ask: —

Is it easy to sit quite still?

This will elicit various answers; among them, usually, will be the correct one, in some form, that the arms and legs get to going of themselves, and feel better when they are moving. The application can be made that the muscles get *hungry* for exercise, just as the stomach gets hungry for food, and that they ought, therefore, to be exercised, as the stomach ought to be fed.

The next question by the teacher may be: —

Does the heart beat faster, or just as fast, after you have been playing some running game?

The answer to this will lead to a simple discussion of the removal of waste and the repair of tissue in the body.

The last leading question may be: —

How do you feel when you have played too hard and too long?

The answer to this will afford opportunity to show that the muscles tell us when they have had enough exercise, and that exercise should be neither too violent nor too prolonged, nor confined to one set of muscles. The danger that tissue will be wasted more rapidly than the waste can be gotten rid of should be brought out.

The plan outlined above contains matter that, with proper preparation, may be condensed into one lesson or expanded into a good many, according as the work is with less advanced pupils, and is to be, therefore, largely informational, or is to cultivate the thought powers of more advanced ones, as well as to give them information. There are opportunities for many sharp, stimulating "whys," in such a lesson or series of lessons with bright-minded boys and girls.

Text-books. — These lessons are to be wholly oral in the lower four grades; above the fourth some simple elementary text may be used, more as a reference book than as a text-book, and without any attempt at formal recitations in the subject.

IN THE HIGH SCHOOL

When the subject is taken up in the high school the work may be directed by the following suggestive outline, which is adaptable to the most general or to the most minute study. It may be used for the study of the human body exclusively, or for work in comparative biology.

ANALYTICAL OUTLINE BY SYSTEMS

1^1 Supportive System.
1^2 Skeleton.
1^3 Bones.
1^4 Anatomy of bones.
1^5 Gross anatomy.
1^6 Bones of the head.
1^7 Cranial.
1^8 The frontal bone.

* * * *

2^7 Facial.

* * * *

2^6 Bones of the trunk.

* * * *

3^6 Bones of the extremities.
1^7 Of the upper extremities.

* * * *

2^7 Of the lower extremities.

* * * *

2^5 Articulations.
1^6 Kinds and characteristics.
2^6 Special anatomy of joints.
3^5 Minute anatomy.
1^6 Parts of a bone.
(Processes, periosteum, canals, etc.)
4^5 Chemical structure.

* * * *

      - 2^4 Physiology of bones.
        - 1^5 Formation and growth.
        - 2^5 Functions (uses).
      - 3^4 Hygiene of bones.
    - 2^3 Cartilages.
    - 3^3 Ligaments.
  - 2^2 Muscles.
    (These are to be discussed under the same general headings as bones.)
- 2^1 Assimilative System.
  - 1^2 Digestive: Alimentary canal.
    - 1^3 Anatomy.
    - 2^3 Physiology.
    - 3^3 Hygiene.
  - 2^2 Circulatory.

* * * *

  - 3^2 Respiratory.
  - 4^2 Secretory organs, other than those accessory to digestion.
- 3^1 Neural System.
  - 1^2 Anatomy.
    - 1^3 Central organs: Brain, spinal cord, ganglia.
    - 2^3 Connecting organs: Nerves.
    - 3^3 Peripheral organs: Special sense organs.
  - 2^2 Physiology.
  - 3^2 Hygiene.

SYNTHETIC OUTLINE

- 1^1 Cells.
  - 1^2 Structure.
  - 2^2 Function.
- 2^1 Tissues.
  - 1^2 The blood.
    - 1^3 Structure.
    - 2^3 Function.
  - 2^2 The epithelium.
    - 1^3 Structure.
    - 2^3 Function.

* * * *

- 3^1 Organs.

* * * *

- 4^1 Systems.

Using the outlines. — The purpose of an outline is to give teacher and pupils a clear, connected view of the whole subject, and to show the relations of its parts to one another. The aim is to strengthen the grasp on the matter as a whole.

Except with the most advanced classes the outline by systems should be presented first, conformably to the natural method by which the mind sets about learning any new thing. Only in the most advanced work and with classes having a fair general knowledge of the subject, should the synthetic outline be used. The first lesson, with pupils old enough to use the outline as a means of study, should be such a discussion of the subject, skillfully conducted by the teacher, as will result in pupils grasping the idea of the three systems, their functions, and relative importance. Careful and stimulating questioning will not only get the pupils themselves to state the ideas expressed by the terms "supportive," "assimilative," and "neural," but will even lead them to suggest these terms. This sort of questioning, leading the pupils to develop thought for themselves, takes more time and more teaching skill than to give a ready-made outline or assign a lesson out of the book, but the results are incomparably more worth while.

It will be seen that the outlines here given are simply skeletons; the completeness with which they are to be filled out is to be determined by the teacher, in the light of his opportunities and his pupils' capacity for such work.

Technical names and functions. — There should be no hesitation about requiring the learning of technical names from the first. There will be little or no difficulty with them, if their *etymological* meaning is learned from some good unabridged dictionary. As a rule, the etymological meaning indicates the *function* of the thing named, and function, or use, is one of the surest and strongest associational bonds. The meanings of such words as "sphenoid," "vomer," "supinator," "biceps," etc., readily pin together in the memory the location, use, and peculiarities of the bones and muscles named by those terms. This simple matter of having the students look up the derivation of the technical names is of too great importance to be neglected for any reason.

TEACHING BIOLOGY

Time is apt to be ill spent in any attempt to teach biology, in high schools, except in its narrower sense as the life-history of some animal or plant, which must be studied by direct observation. To such teaching the outlines above given will be found very adaptable, with slight modifications. Through their use in the study of animal or plant physiology the correlations of all living things can be shown, and a beginning can be made in comparative biology.

All teaching and studying of physiology or biology should be so directed as to result in a reverence for life that shall deepen as knowledge increases.

CHAPTER XVI

ENGLISH GRAMMAR

A FEW years ago, one of the outward swings of the pedagogical pendulum carried grammar, as a separate study, out of the curriculum of many schools. For a while a so-called "grammar" was taught, rather incidentally, in language lessons. Training in correct sentence building has a firmer place than ever, to-day, in language work in the first years of school; but the inevitable return swing of the pendulum has brought back grammar as a technical study. It is as excellent a mental discipline as arithmetic, and cannot be dispensed with. It is sometimes claimed that English is a "grammarless tongue"; but there must be some general laws or usages of sentence construction in English, as in every other language, and it is the business of grammar to discover and formulate these laws. It is true, there is very little inflection of English words, but grammar is by no means concerned with inflection only, even in the case of the highly inflected tongues.

Definition. — The correct definition of grammar as "the *science* of the *sentence*" should serve to establish its true place and function as a school study. The work done in language lessons is not grammar, because it is training in an *art* — the art of building sentences and paragraphs. But this training in the art of the sentence in the lower grades is a prerequisite to the best work in technical grammar in the higher grades. A discussion of it and how it leads to grammar proper will be found in Chapter XVIII.

What grammar includes. — Grammar, being the science of the sentence, is concerned with nothing beyond the sentence. It has to do only with the question whether a given sentence is *syntactically* correct. With the building of sentences into paragraphs, and with their rhythm and flow, grammar has nothing to do. It is a grievous misconception of the function of grammar to class it, as is sometimes done, with expressional studies. Expression is an art, grammar a science. A knowledge of technical grammar does not save one from flagrant solecisms in speaking and writing. Such knowledge is an aid to correct expression, but it in no wise cultivates the power of expression.

One grave fault of the older text-books was that they undertook to include orthography, orthoëpy, and prosody, in the province of grammar. Orthography and orthoëpy belong to the spelling-book and the dictionary, and prosody belongs to rhetoric; they have no place in grammar. The subjects legitimately belonging to grammar are *diagraming*, *analysis*, and *parsing;* and they should be taken up in the order here shown.

Time to begin. — The study of technical grammar should begin not earlier than the fifth year of school, and preferably a year or two later than that. The pupils, by the time they take up the text-book in the subject, should have learned to recognize quickly the parts of speech in their common uses, should be able to discriminate between the subject and the predicate of any ordinary sentence, and should have a pretty ready acquaintance with the phrase and the clause. All these things they can learn simply and naturally without knowing that they are preparing for grammar.

Diagraming first. — Diagraming should be introduced first, — whether the text-book used places it first or not, — and should be drilled upon until the pupils have considerable mechanical facility in the handling of the diagram. Diagraming should come first because it is concrete and objective, and because it is analytic in its process. It necessitates a taking apart of the sentence, and pictures the relations of the parts to one another; at the same time, it does not require a detailed analysis of the sentence, and so naturally stands first in the operations grammar is designed to teach. Before diagraming is undertaken the pupils should have learned what are the essential elements of a sentence — subject and predicate — and what adjective, objective, and adverbial modifiers, or elements, are. So much may easily be learned and diagraming begun before the text-book is taken up.

The simpler the better. — Diagraming is as useful an aid to the study of technical grammar as the written solution is to the study of arithmetic. The mechanism of the diagram should be very simple, lending itself to easy representation on blackboard or tablet. The diagrams given on page 250 by way of illustration, are, with very slight modifications, such as are used in Holbrook's Grammar.

The first few lessons should show the evolution of the diagram, for the different kinds of sentences, from the simplest form. Sentence and diagram should develop together. These suggestions may be illustrated thus: —

(1) Boys play. $\begin{cases}\text{Boys}\\ \text{play.}\end{cases}$

(2) Boys play marbles. $\begin{cases}\text{Boys}\\ \text{play} \mid \text{marbles.}\end{cases}$

(3) All boys play marbles in the spring. $\begin{cases}\text{boys} \mid \text{All}\\ \text{play}\begin{cases}\text{marbles}\\ \text{in spring.} \mid \text{the}\end{cases}\end{cases}$

(4) Henry is sick. $\begin{cases}\text{Henry}\\ \text{is} \diagdown \text{sick.}\end{cases}$

(5) Henry is not violently sick. $\begin{array}{l}\begin{cases}\text{Henry}\\ \underline{\text{is}} \diagdown \text{sick.} \mid \text{violently}\end{cases}\\ \quad\rceil\text{not}\end{array}$

(6) His parents, who were themselves poor laborers, wanted him to become a lawyer.

$$\begin{cases}\text{parents,}\begin{cases}\text{His}\\ \begin{cases}\text{who} \mid \text{themselves}\\ \text{were} \diagdown \text{laborers,} \mid \text{poor}\end{cases}\end{cases}\\ \text{wanted} \mid \underline{\text{to become}} \diagdown \text{lawyer.} \mid \text{a}\\ \qquad\qquad\qquad\rceil\text{him}\end{cases}$$

(7) When they considered the matter they decided to go.

$$\begin{cases}\text{they}\\ \text{decided}\begin{cases}\text{to go.}\\ \begin{cases}\text{they}\\ \text{considered}\begin{cases}\text{When}\\ \text{matter} \mid \text{the}\end{cases}\end{cases}\end{cases}\end{cases}$$

(8) It is not necessary for us to remain longer.

$$\begin{cases}\quad\text{(for)}\\ \text{to remain}\begin{cases}\text{us}\\ \text{longer.}\end{cases}\\ \quad\text{(It)}\\ \underline{\text{is}} \diagdown \text{necessary}\\ \rceil\text{not}\end{cases}$$

(9) The older son went to college, and the younger one entered a business career.

$$\begin{cases}\begin{cases}\text{son}\begin{cases}\text{The}\\ \text{older}\end{cases}\\ \text{went} \mid \text{to college,}\end{cases}\\ \qquad\text{and}\\ \begin{cases}\text{one}\begin{cases}\text{the}\\ \text{younger}\end{cases}\\ \text{entered} \mid \text{career.}\begin{cases}\text{a}\\ \text{business}\end{cases}\end{cases}\end{cases}$$

It is plain that the particular form of diagram is of no great importance, provided only it is simple enough not to confuse.

Analysis. — As soon as some facility has been acquired in diagraming easy sentences, oral analysis should be begun. This should at first be very general and simple, consisting mainly in naming the essential elements of sentences and a few of the subordinate modifiers classed as to function — adverbial, adjective, etc. At this point may be begun a careful drill upon the formation and uses of phrases and clauses. Practice in analysis should continue until the pupils can give a complete, detailed description of the sentence and its elements. The form of analysis should be really analytical, proceeding from wholes to parts. A complete analysis will describe the sentence, as a whole, then the complex subject — noting the simple subject and each modifier — and, last, the complex predicate, and its separable elements.

Value of analysis. — The careful analysis of sentences is as important as the oral explanation of a written solution in mathematics. It enables the teacher to test the accuracy, fullness, and originality of the pupils' knowledge, and gives a specific and valuable training in logical thought and accurate expression. Technical grammar is elementary logic; and analysis of sentences is very helpful in clarifying thought, and in testing ability *to think straight.*

The chief value of grammar as a disciplinary study lies in the fact that it deals with the instrument of thought itself. Ability to analyze or par
upon ability to read understandin
anything that can be *read*

and parsed. This should be carefully borne in mind, and pupils should not be called upon to analyze or parse what they cannot understand. Sentences should be discussed as to their meaning, before their constituent words are parsed.

Parsing. — Diagraming and analysis deal with sentences as wholes, and with their proximate elements. Parsing carries the analysis of the sentence structure to the ultimate elements — the words. Grammar is almost wholly analytical; the corresponding synthetic study is composition.

Parsing consists in classifying, describing, and construing words in sentences, and of these three processes the last is the essential one. It takes but little training to enable even young pupils intelligently to classify and describe the several "parts of speech," in their ordinary uses; it is very easy for the teacher and pupils to drop into the rigmarole of "John is a noun because it is a name, a proper noun because it is the name of an individual," etc. Perhaps nowhere to-day is such gibberish gone through in the name of parsing. Freedom from it is one good result of the revolt against book grammar.

The great defect of the older manner of parsing was its lack of emphasis on the construction of words, and its too great emphasis on rules. As a matter of fact, the less attention paid to rules as such, in grammar as in arithmetic, the better. A rule in grammar is dependent on construction and both depend upon *function*. Hence the necessity of considering grammar as a *science*, and studying and teaching it inductively, as other sciences are studied. The functions of words cannot be determined *a priori;* they can be known only through a study of their uses in oral and written sentences. A word may, according to the use made of it, be any part of speech, and may have almost any construction.

Literature in place of "rules." — The text-book of grammar, then, should devote the space usually given to rules, and as much more as possible, to copious extracts from the best literature, standard and recent. These extracts should be the principal object and basis of study, and pupils should be trained to generalize from them, and from examples outside the text-book, such definitions and rules as may be necessary. A text-book in grammar is best used as a reference book, while the actual study is a study of sentence construction in representative literature.

It is only by such work that *idiom* can be properly studied. Idiom is the very life of a language, and yet is the thing that is least subject to rules. It is in their treatment of idiom that all our grammar text-books are weakest and most deficient.

The following lesson plans may serve to illustrate the method of inductive study of words and constructions: —

LESSON PLAN ON EXPLETIVES

I. Ends of the lesson.
    (1) To teach the expletive as a part of speech.
    (2) To teach its function and construction.

II. Processes in realizing these ends.
    (1) Write the following sentences — or similar ones — on the blackboard: —
        1. I fear that your getting wet will make you ill.
        2. It is evident from the man's face that he is reliable.
        3. The report that the bank had closed was false.
        4. It is not necessary for you to remain longer.

5. There are forty pupils in attendance to-day.
6. The Japanese head rest, or pillow, is made of wood.

(2) By questioning and discussion draw from the pupil that "that" in the first, second, and third sentences, "it" in the second, "it" and "for" in the fourth, "there" in the fifth, and "or" in the sixth, are words unnecessary to the sense. Give the term "expletive" as applying to these words.

(3) By further questioning and illustration lead the pupils to see that these words are used merely to make the flow of the sentence smoother, and have no real syntactical relations to the other words, that is, they are independent in construction.

The lesson should close with examples written by the pupils, illustrating expletives and their uses.

Lesson Plan on the Infinitive Mode

I. Ends of the lesson.

(1) To show the infinitive as an infinite form — that is, unlimited by the person and number of its subject.

(2) To show that the subject of the infinitive is always in the objective case.

(Before this lesson is reached the pupils should have learned that the infinitive is a verb, and that its most obvious sign is the prefix "to," expressed or omitted.)

II. Processes in realizing these ends.

(1) Place on the board several sentences like the following: —

1. He found himself to be too ill for the work.
2. Their friends desire them to remain longer.
3. He desires me to come away early.
4. I wish you to go for my rain coat.

(2) Lead the class through the development indicated below: —

Name the infinitives in these four sentences.
How do you tell that they are infinitives ?
What is the subject of each of these infinitives?

What are the grammatical person and number of "himself"? of "me"? of "you"?

What difference do you find between the infinitives and the other verb in 2 and 3, besides the sign "to"? (Bring out the fact that "desire" changes form according to the number of the subject, while the infinitives do not. When this is seen, have the pupils make several other sentences to illustrate it.)

What is the case of each subject of the infinitives, in the numbered sentences and those you have just written?

Supply the subjects for the infinitives in these sentences: —

She wants to find her book.
They used it to stop the boat.
I waited to hear the result.

In what case are the subjects you have supplied?

What two things have you learned from studying all these sentences?

In the practical working of this lesson plan — or any other — only the general line laid down can be followed; the questions, after the first few, depend upon the answers given.

The subject in outline. — To aid in the study of grammar the following outline may be developed, and built up in such detail as may seem best. Except with the most advanced students, a topic should be studied before the formal outline of that topic is made, — thus, diagraming should be studied before it is outlined, and so with analysis and parsing.

Following this plan, the outlining becomes an excellent review of the several subjects. The arrangement of material in the outline should be, as much as possible, the work of the students.

OUTLINE OF ENGLISH GRAMMAR

- 1^1 Preliminary Definitions. (These should be arrived at inductively, or at least copiously and clearly illustrated.)
  - 1^2 *A word* is a syllable or combination of syllables, written or spoken as the sign of an idea.
  - 2^2 *A phrase* is a group of related words, containing no subject or predicate.
  - 3^2 *A clause* is a group of related words, containing a subject and predicate, but not completely expressing a thought.
  - 4^2 *A sentence* is a group of related words, containing at least one subject and one predicate, and completely expressing a thought.
    - 1^3 Kinds of sentences.
      - 1^4 As to structure.
      - 2^4 As to mode of statement.
    - 2^3 Elements of sentences.
      - 1^4 Principal, or essential, elements.
        - 1^5 Subject.
        - 2^5 Predicate.
      - 2^4 Subordinate, or non-essential, elements.
        - 1^5 As to modification of base.
          - 1^6 Simple elements.
          - 2^6 Complex elements.
        - 2^5 As to function of base.
          - 1^6 Adjective elements.
          - 2^6 Adverbial elements.
          - 3^6 Objective elements.
          - 4^6 Subjective elements: an element whose base is the subject of an infinitive verb.
        - 3^5 As to structure of base. (*Holbrook's Grammar.*)
          - 1^6 First class: an element whose base is a word.
          - 2^6 Second class: an element whose base is an infinitive or prepositional phrase.
          - 3^6 Third class: an element whose base is a clause.

2^1 Diagraming.
(Drill may be given in several of the best known systems, after one is *thoroughly learned.* Pupils should learn to read a diagramed sentence readily, and to analyze and parse from the diagram.)
3^1 Parsing.
1^2 The noun.
1^3 Kinds of nouns.
2^3 Properties or modifications of nouns.
3^3 Constructions of nouns.
1^4 In the nominative case.
1^5 Dependent constructions.
2^5 Independent constructions.
2^4 In the objective case.

* * * *

3^4 In the possessive case.

* * * *

2^2 The verb.
1^3 Kinds of verbs.
2^3 Properties or modifications of verbs.
3^3 Conjugation.
4^3 Inflection.
5^3 Constructions of verbs.
1^4 In the finite modes.
2^4 In the infinite modes.
(The other parts of speech should be discussed under similar topics.)

Applied grammar. — Grammar is too often considered by the pupils as "dry" and of little practical value. Such an objection is frequently valid, in some degree, for the subject is generally presented to students too young to perceive its disciplinary value; and frequently no pains is taken to apply the principles and inductions of grammar in the everyday speech and reading of the pupils.

If the principle of *use* is valid (Chapter III., Principle

VII.), then, from the first lesson, practical applications should be made of what is learned in technical grammar. Examples for correction, for instance, should be drawn from the daily speech of the pupils — which will furnish an abundant supply — rather than from the manufactured "false syntax" found in some grammar text-books. At first, the teacher should quietly observe and jot down, for use in the class, the misuses of words and the wrongly constructed sentences of the pupils. It is well to make the criticisms personal, the teacher saying to the class, for example, "I heard Henry say to-day 'I saw them men myself;' what should he have said? Why?" Soon, without being told or especially encouraged to do so, the pupils will begin to give examples of misuses which they have heard one another fall into. So long as this mutual criticism is friendly and right-spirited, — and the teacher must see to that, — the effect will be excellent.

When a pupil's ear becomes sensitive to grammatical inaccuracies, he is in a fair way to overcome his own early habits of incorrect speech.

Analysis and parsing in reading and literature. — The lessons learned in the grammar class should also be applied and amply illustrated in the regular reading exercises of the pupils. The teacher must look after the syntax of the pupils' written work in all branches, just as he does after their spelling, and good or bad syntax should count in the estimate of such work. Even the written statements of problems and theorems will afford opportunities for criticism upon applied grammar. The pupils' eyes, as well as ears, must be made sensitive to solecisms. The grammar text-book should be retained within easy reach, even in the advanced classes in English literature, and should be frequently used. To pupils in the fourth or fifth reader, unaccustomed to such drill, it will be a revelation to find that there is a real connection between grammar and the reading matter in their readers or in their favorite storybooks. And it will be quite as much a revelation to most high school or college students of English literature to find how little grammar they learned from the text-book, and how much they can learn from Lowell, or Carlyle, or Milton.

By an occasional close grammatical analysis of a few sentences, taken fresh from the reading matter immediately in hand, the literary taste is made more discriminating, the logical faculty is given valuable exercise, and the dead-and-dry bones of technical grammar are clothed upon and the subject made vital and energizing.

CHAPTER XVII

NUMBER: ARITHMETIC

Less time and more arithmetic. — It has long enough been conceded that too much time is given to arithmetic, and that the results are too meager. Various remedies have been suggested, — none better than those outlined in the reports of the Committee of Ten and the Committee of Fifteen. These remedies are (1) to cut out of the arithmetic course all work that legitimately belongs to algebra, or to apply algebraic methods in advanced arithmetic; (2) to cut out all problems that are good only as a mental gymnastic, with no value applicable in everyday matters of business; (3) to give much more attention than has so far been given to securing clearness of *solution* (analysis) and quickness of *operation.*

A full discussion of these points belongs to educational management, and would fall under the head of curriculum making; but somewhat should be said upon them here, since method is concerned also with the *what* and the *how much.*

Algebra in arithmetic. — Many of the problems in some of the most widely used text-books are algebraic in character, rather than arithmetical. It is a waste of time to use a dull tool when a sharp one is at hand, and all such problems should be solved by algebraic processes.

Some of the later arithmetics introduce elementary algebra as such, and the idea seems to be a good one. The best principle for the guidance of the teacher, in the use of any text-book on arithmetic, is, *solve by arithmetic when the problem is arithmetical; solve by algebra, or wholly omit, problems that are algebraic.* To make the principle clear, it may be further said that every problem should be considered algebraic that can be solved more readily and simply by algebraic processes than by arithmetical ones.

Arithmetical conundrums. — One of the chief values of arithmetic as a school study is the mental discipline it affords. This is true, however, or should be made true, of every subject in the public school curriculum. But in no other subject as much as in arithmetic is "mental gymnastic" made an excuse for wasting the pupil's energy upon material whose only value is that it affords exercise in the tricks of the number contortionist. Such tricks are not without benefit, certainly, but equally as good exercise as they afford can be had from problems that are drawn directly from the real business of the household or the market. Only such problems should find a place in a text-book on arithmetic, and all arithmetical conundrums should be rigidly excluded.

Technical applications of arithmetic. — There are many problems of even the most practical nature that are technical to various lines of business, and these should be, for the most part, omitted from general school work, and relegated to the different courses in commercial arithmetic in the business schools. Such, for example, are the problems of percentage met with in insurance and exchange; and those that are peculiar to the business of the lumberman, the bricklayer, and the stone mason. Instead of these technical problems, and others that not one grown citizen in a thousand ever has any need to know about, let the *essentials* be thoroughly and rationally drilled upon. In spite of well-meant efforts to endue arithmetic with a *culture* value, it seems to have so little that it is evidently wise to abandon the attempt to get culture from such a barren source. Pupils should be drilled in arithmetic as in the use of a tool whose skillful handling is necessary in the successful prosecution of other matters.

Clearness in thinking; facility in doing. — In teaching arithmetic, as in teaching every other subject in the curriculum, the aim should be to secure clear *thinking* and skillful *doing*.

To say that arithmetic lacks culture value is not at all to say that it lacks *disciplinary* value, for it has this in a very great degree. The results of good arithmetic teaching are exactness in analysis and quickness and correctness in the manipulation of figures. Along with these also goes increased neatness of written work done according to prescribed forms, — a matter of sufficient importance to justify far more attention than it usually gets.

From the first time that problems, even the simplest, are used in number work, clear through the most difficult examples of the higher arithmetic, there should be constant drill on analysis and on the mechanical memory work of the fundamental operations.

Much stress has, at times, been put upon "intellectual" or mental arithmetic, as contrasted with written arithmetic. All arithmetic is, of course, "mental," and there seems to be no good reason for the production and use of special text-books called mental arithmetics. What is needed is not a special text-book, implying a vicious and false distinction, but teachers who can, with any text-book or with none, give thorough and persistent drill in the *thought processes* involved.

Two phases of analysis. — In the analysis (solution) of a problem there are two steps: one is the determination of what data are *given* and what results are required, and a careful discrimination between the given and the required; the other is the perception of the *relations* in which the things given must be placed in order to reach the desired results, and the proper indications of those relations by symbols. Giving this analysis without performing the actual operations actively employs and correspondingly trains the judgment, — the relational faculty, — and pupils should often be exercised in it. An excellent drill is to be had from it, even when the pupils go no farther than naming, in any problem presented, the things given and the things required. Much of the haziness and unpardonable looseness of the work done in solving problems is due to a failure to exercise this preliminary discrimination between the terms given to work *with* and the ends to work *to.* As a result of this laxness pupils form the habit of hastily looking over the problem, and, after referring to the "rule," setting down figures in some haphazard combination, and then looking at the printed "answer" for justification!

"Rules" and "answers." — The value of arithmetic as a means of cultivating originality and precision of thought is discounted a third or half by the use of te books having *rules* and *answers.* Rules should be m by the pupils, as the result of their mastery of processes and by induction therefrom. Pupils should be trained to use their own judgment so correctly, and to rely upon its conclusions so confidently, that they will *know* when they have the correct answer without "looking in the book" to see. In practical life, the "answers" to problems of arithmetic are found, ultimately, in increased comforts of living, and we must know their certainty and correctness before they are found.

Operative skill. — The correct and ready performance of the operations indicated by the symbols is a matter, mainly, of mechanical memory; but it is highly important to secure accuracy and speed of operation. Carelessness in written solutions should be as rigorously checked as looseness of analysis. Absolutely correct results must be insisted upon. The teacher should require *accuracy*, *rapidity*, and *neatness* in all written solutions. These three are the results of skill, and skill comes only through abundant practice. After principles and processes are understood, there should be much drill in their ready application and use.

The principles laid down above can be applied, in one or another form, from the very first lesson in number.

PRIMARY ARITHMETIC: NUMBER WORK

First lessons must be concrete. — From all the recent discussion as to what number is and as to how the child gains his first ideas of it, no good reason has emerged for not making the first lesson in number *objective* and concrete. Arithmetic is no exception to the rule that all knowledge comes directly or indirectly through the senses. Granting the necessity of the child's grasping the idea of *relative magnitudes*, in order to do effective work later, the fact still remains that the *first* idea of number is the idea of *how many*. The idea of how much — that is, of relative quantity or magnitude — may arise at about the same time, but is not associated, by the child, with the idea of the how many in any essential way. To state the matter clearly, the child must know the *how many* before he can make practical arithmetical use of a knowledge of relative magnitudes.

Counting; reading and writing figures. — According to the testimony of from half to two thirds of the teachers working with children during the first school year, many pupils enter school who are unable to count beyond five, and many cannot count even so far.

It is necessary, therefore, to begin the work in number with drills in counting. Right along with the counting must, of course, go the writing and reading of figures. The purpose is to fix the idea of *numbers* — rather than *number* — and to train to a ready and automatic recognition of figures as number symbols. The aim here should be similar to that in teaching beginners to read, — that is, to perfect the pupils in the *mechanics* of the subject. This aim should dominate the work all through the four fundamental operations. Reading figures, and numbers as symbolized by them, adding, subtracting, multiplying, and dividing must become automatic. And, as in reading the subject-matter by whose use mechanical accuracy is to be secured must be interesting in itself, so the subject-matter of drill in arithmetic should, as far as possible, be interesting and real.

The course. — The course in number work for the first three years should consist of oral and written exercises which shall give the pupils considerable skill and freedom of operation in the groundwork, with whole numbers, with such fractions as come within their everyday experience, and with the more familiar denominate numbers.

Apparatus. — Any simple objects easy to handle may be used as apparatus for the earlier lessons; but nothing is better than splints about six inches long. A thousand of these can be had for a dime, from any kindergarten supply house. Rectangles and circles cut into parts to illustrate fractions, and the common units of measurement — the pint, quart, peck, foot, yard — should be sufficiently abundant to enable the teacher and pupils to use them freely, both in class and in seat work. It would seem unnecessary to make so trite a suggestion, but it is a fact that in thousands of schools the barren grind of arithmetic is still gone through without the use of any illustrative material. What success there is in teaching it is mainly due to the experiences with numbers and the measurement of quantity which the pupils have in their homes.

Ends in view. — The special ends which the teacher must have in clear view in the primary work, and to which every exercise must be made to contribute, are — in their order — (1) to develop the idea of *concrete* number; (2) to make clear the thought that the secondary value expressed by a figure depends upon its *place;* (3) to develop the idea that only those quantities can be compared whose values are measured in the same kind of units. By the time so much is done, the idea of abstract number will have developed sufficiently for all purposes of primary and intermediate teaching.

Of course, these aims cannot be formulated to the pupils, much less by them, but the ideas they embody can be developed and illustrated so as to give the learners a confident, though not consciously defined, working familiarity with them.

Concrete number. — The idea of concrete number is gained from counting objects of the same kind, as five splints, three spools, eight horses. The next step — the counting of different objects as four, seven, or ten *things* — though still in concrete numbers, is toward a generalized idea, and so is toward the concept of abstract number. As soon as counting begins, reading and writing figures should begin. The 0 should be taught among the first, its *value* illustrated, and the name, *zero*, given. As the ideas of one, two, three, etc., things are grasped, the *names* of the corresponding numbers should be given, and the figures should be written on the board by the teacher and copied by the pupils. The writing should not be carried farther than 9 until the numbers and the figures corresponding can be instantly recognized by the pupils.

Teaching 10. — As in the case of the other numbers and figures, as soon as ten objects are counted, and "ten" is understood as number, then the symbol "10" should be written on the board as representing that number, and opportunity should be given for questions from the class. If the natural curiosity and quickness of thought of the pupils have not been deadened, the question, in one form or another, will come soon, — "How does a 1 with a 0 make *ten?*" Now is to be developed and illustrated the idea that one value of a figure depends upon its place, and the idea, also, that value increases from right to left by a decimal scale. A right hold upon these ideas will make addition, subtraction, and multiplication something more than mere mechanical operations, and will make easy the way through division, — "short" and "long," — through denominate numbers, and, indirectly, through fractions.

The teacher, transferring the ten splints from the right hand, where all separate units have so far been held, to the left hand, and placing an elastic band about them, shows the *ten splints* as now *one bundle*. The 1, there on the left, in the "10" written on the board, means *one bundle worth ten;* the 0 means no units in the right hand, and is written by the 1 to make it keep place. At the proper time, 100 can be illustrated in the same way, by making ten of the ten-bundles into one large bundle and laying it on the desk, to the left, while the 0's of the 100 are shown by the empty hands. Any number between 10 and 200 — and, if necessary, larger ones — may be easily and simply illustrated concretely in this way. Special attention must be called to the fact that ten sticks are required for each small bundle, and ten small bundles for each large one.

Counting by groups. — Along with the work outlined above should go some drill in counting by *groups*, — as one two, two twos, three twos; one three, two threes, three threes, etc. The value of this group counting will appear in the operations of addition and multiplication.

THE FUNDAMENTAL OPERATIONS

By the time the pupils can readily count, read, and write figures to four, they should be put at concrete work in the four operations, and should begin to build the tables. They should use objects in making each of the four tables, as far as 10 at least.

Successful work in arithmetic, as in higher mathematics, depends very largely upon the power to make and combine images; therefore there should be an early storing up of abundant sense impressions from which to make images. But it must be borne in mind that it is as fatal to continue the work too far with objects as it is to begin it without them. The need is only that there shall be a firm basis of experience of the concrete upon which the mind may confidently and solidly build.

Thoroughness in the tables. — Beyond 10 the table making may be done by counting, if necessary, and by using combinations already learned. But in whatever way the pupils develop the tables — and the important point to guard is that they *do* develop them in some way instead of learning them "ready-made" — the drill upon them must continue until there is *automatic facility.*

Use of the signs. — From the very beginning, correctness in using and reading the signs should be insisted on; "$2+3=5$," for example, should be read "two *plus* three *equals* five," and "$3-2=1$" should be read "three *minus* two *equals* one." The same suggestion is equally applicable in the other two operations. The signs and their names are readily taught by simply and naturally using them.

In conformity with the principle of use, the tables also should, as fast as learned, be *applied* in simple, interesting, and practical problems whose conditions and terms are familiar in the ordinary experiences of the children.

Incidental arithmetic. — It is in the solving of such problems that arithmetic is learned. They should be set for regular work during the period allotted to arithmetic. But much can be accomplished by incidental number work in other exercises. For example, the teacher may say to the reading class, "We read three paragraphs in this story yesterday, and have just finished four more in this lesson; how many have we read?" In the oral lessons in physiology and other nature-study subjects, and very often in the play of the children, there are many opportunities for incidental number work, and the wise teacher will use them well. The chief good of this kind of drill, aside from the practice it gives, is that it serves to show that arithmetic has uses outside the arithmetic class.

But arithmetic thus applied should always be kept subordinate and incidental; it is liable to overshadow the principal subject and distract attention from it. The child cannot get either the scientific or the æsthetic value of a flower if he has to give much attention to the number of its petals, or tell precisely how many more petals there would have to be to make seven.

Numbers expressed by two figures. — As soon as the pupils gain some facility in adding and subtracting numbers up to ten, they should be set to work on adding numbers expressed by two figures.

At first the pupils, in adding or subtracting, should name the figures according to their order. For example, the addition of 43 and 36 should be orally described thus: "Six units and three units are nine units; four tens and three tens are seven tens; the sum is seven tens and nine units, or seventy-nine."

"Carrying" and "borrowing." — It is to be hoped that the teachers of to-day will try hard to eliminate from the vocabulary of arithmetic the time-worn terms "borrowing" and "carrying." They are false and misleading. To illustrate: in solving the problem, Add: $\begin{array}{r}65\\ \underline{36}\end{array}$ the pupil should say, "Six units and five units are eleven units, which are one unit and one ten; I write one in the units place, and add one ten to the three tens, making four tens; four tens and six tens are ten tens, which are one hundred with nothing in tens place; I write 0 in the tens place, and 1 in the hundreds place." There can be no "carrying" of "1" from the sum of the units to the tens column; if it is one ten, it is, by virtue of being a ten, already in the tens column.

So, in subtraction there can be no "borrowing," if a right method is followed. For example, in solving, Subtract: $\begin{array}{r}65\\ \underline{36}\end{array}$ the pupil should say, "I cannot subtract six units from five units, but by using one ten of the six tens in the minuend as ten units, I have fifteen units; taking six units from fifteen units leaves nine units; three tens from five tens leaves two tens."

The processes, in subtraction especially, should be illustrated a few times with objects. What is insisted on is *truthfulness* of process and of arithmetical language. Certainly, after the pupils come to understand these processes of addition and subtraction, they should not be required to give such analyses as are shown above, but should be trained to *rapidity*.

The same care should be exercised in multiplication and division. Then there need be no difficulty about "writing the first figure of the product under that figure of the multiplier which produced it."

The terms "short" and "long," applied to division, should follow "carrying" and "borrowing" to the limbo of discarded words. When so-called "long division" is reached, an illustration or two like the following will usually be sufficient to make its imaginary difficulties disappear — provided there has been sufficient drill on the *division table.*

$$
\begin{array}{r|l}
19)42465 & 2000 \\
\underline{38000} & 200 \\
4465 & 30 \\
\underline{3800} & \underline{5} \\
665 & 2235 \text{ quotient.} \\
\underline{570} & \\
95 & \\
\underline{95} &
\end{array}
$$

Mastery first, then speed. — It is sometimes urged that pupils, at the beginning of any subject in arithmetic, should be trained to mechanical precision in performing operations, without stopping to understand clearly the *reason* for the processes. This is plainly contrary to the best pedagogy and so to the best interests of the pupils. As a matter of fact, no step should be taken in arithmetic, at any point in the course, the reason for which is not made clear at the time. To do otherwise is to lose the real disciplinary value of arithmetic as a means of training the rational faculty. After the child is old enough to take a given step in number work he is old enough to understand the way he is to take it. The rule should be "*Mastery* first, *then* speed." Time, plenty of time, must be used to secure mastery; objects must be used, illustrations given, explanations made, — in short, no effort must be spared to make each forward step a step into *light* instead of into darkness. Then there must be persistent drill until accuracy and rapidity become automatic.

FRACTIONS

Fractions, the horror of many a poor child and the bugbear of not a few grown people, may be as easily introduced to pupils as the "whole numbers." The teacher should not lose sight of the fact that fractions are *whole numbers*, too, and should do his teaching with a clear definition in his own mind, similar to the following: A fraction is the expression of one or more units which are themselves equal parts of another kind of unit. No definitions are to be given the pupils, but by objective illustration they are to be led to see what a fraction is. When they grasp the fact that ⅔, for example, is an expression of two units of the name of thirds, and that in order to get these units (the thirds) some other unit was divided into three equal parts, they know all they need to know about the nature of a fraction. And when they clearly know, as they should before fractions are introduced, that numbers, in order to be combined or separated, must be made up of the same kind of units, then they have all there is in the fundamental operations as applied to fractions. In writing fractions, the denominators should sometimes be written out, thus — 2 thirds, 3 fourths. So simple a device makes it plain that a fraction is some number of *units* and also that fractions made up of different kinds of units cannot be added together any more than two oranges and three apples.

During the first three years of school life the pupils will be drilled in only the simplest operations with fractions, but these should be objectively illustrated until they are perfectly understood. By the end of the third year the pupil should know thoroughly what a fraction is, and should know the *processes* in the various operations with them, so that he can readily apply these processes, singly or in combination, in more difficult problems in fractions.

DENOMINATE NUMBERS

It does not matter which subject is first taught,—denominate numbers or fractions. Fractions are "denominate" numbers, written, for convenience, in a special way.

Making the "tables."—The denominate number tables should, like those in addition, multiplication, etc., be made by the pupils themselves, and by the use of the instruments of measurement. It is a high misdemeanor to have a pupil say "two pints make one quart, four quarts one gallon," before he has handled the pint, quart, and gallon measures for himself and has seen the relations between them.

The first simple problems in denominate numbers should be worked out with the proper instruments of measure in hand.

INTERMEDIATE ARITHMETIC

Place in the course.—What is usually called intermediate arithmetic should be strengthened a little, and made to include more practice problems in everyday affairs. If this were done, there would be no real need of any pupil's spending time on the advanced arithmetic of the usual school course; about one third of the time commonly spent in arithmetic could be saved, the pupil, at the same time, getting all the arithmetic he would ever have any use for.

An introduction to algebra. — This grade of arithmetic should be "intermediate" in the sense of standing as a sort of link between arithmetic and algebra, rather than in the sense of standing between elementary and the advanced stages of arithmetic. The higher arithmetic so generally taught not only is not a helpful introduction to algebra, but many of the problems laid down in current text-books cannot be solved without the use of algebraic processes. Algebraic quantities and symbols are not, perhaps, used, but the processes are algebraic. Hence, instead of higher arithmetic being an introduction to algebra, algebra is necessary to the work required in the higher arithmetic. It would seem wise, then, to make the intermediate arithmetic introductory to algebra, and cut out the so-called "higher" arithmetic altogether. This seems advisable, even if no more is done in algebra than to give the pupils some training in abstract generalization. For example, even in primary classes, among such problems as, "If one orange costs three cents how much will a dozen cost?" there should appear an occasional one like this — "If one pencil costs two cents, how much will x pencils cost?" And in advanced work the same plan could provide a few such examples as, "If I send my broker b dollars to invest in city 4's, at 8% discount, brokerage $y\%$, what is the amount of the bonds purchased?"

The taking up of work in the intermediate arithmetic presupposes *facile* familiarity with the four fundamental operations, as applied to whole numbers in the decimal scale, to simple fractions, and to easy denominate numbers. To secure such familiarity should be the constantly in view in the primary work.

Subjects to be emphasized. — In intermediate the purposes should be to make the learners adept in the operations used in the more complex combinations of numbers; to give them, especially, *a clear insight into number relations;* and to train them to a ready comprehension of the applications of arithmetic in ordinary business transactions.

Factoring. — With these things in view, particular emphasis should be laid early on *factoring.* There should be much drill, direct and indirect, in factoring at sight, or by "inspection." There is every reason why pupils should work out a "factoring table," as they worked out an addition table. A list of prime numbers should be committed to memory, and also the prime factors of the most used composite numbers. To have these things ready for instant use is as convenient and time-saving, often, as to know the multiplication table.

Much more attention than is usually given or called for by the text-book should be bestowed on the *relations* between minuend, subtrahend, and remainder; between multiplicand, multiplier, and product; and especially between dividend, divisor, quotient, and remainder. Readiness in the perception of these relations will be helpful throughout not only the arithmetic, but the higher mathematics also.

Even at this early stage, the pupils can learn what a *formula* is, — not by definition, but by use. They can readily learn the meaning of such expressions as $\frac{p}{M} = m$, (M standing for multiplicand and m for multiplier), and $\frac{D}{q} = d$.

G.C.D. and L.C.M. — The drill in finding the greatest common divisor and the least common multiple should not be confined, as is generally the case, to operations with abstract numbers, but should include the solution of problems whose conditions may be real. The pupil gets nothing but "figure gymnastics" from such problems as "Find the G.C.D. of 15, 45, 90;" but he has something concrete and illustrative, as well as something of which he can see a use, in questions like these:

"What is the largest bill I can use in paying three debts of $20, $45, $70 respectively?"

"How long a stick will exactly measure two logs, one 15 ft., the other, 9 ft. long?"

"Here are four milk cans, holding 8 qts., 18 qts., 20 qts., and 14 qts. respectively; what is the largest vessel that can be used in emptying the cans, if it is filled each time milk is drawn?"

The same sort of problems may be used in exercises in finding the L.C.M.

Some drill exercises may be given with abstract numbers, and both G.C.D. and L.C.M. should be reviewed in connection with the more advanced work in fractions.

Proportion. — Hardly any other topic in arithmetic affords so good an opportunity as does proportion for an exercise of the power to perceive the abstract relations of quantities. The drill in proportion should be very careful and thorough, and should result in a clear knowledge of what ratio is, of what is meant by "equality of ratios," and of the sort of problems that involve proportion in the processes of their solution.

Practical problems. — In the assignment of problems two things should be kept in mind: (1) that only *practical* problems — those whose conditions are possible in actual domestic or business experience — should be set for solution; and (2) that a problem may be practical in itself, and yet not be so within the range of the pupil's imagination or experience. An excellent plan, in close accord with the accepted principles of pedagogy, is to have the pupils themselves make problems. Not only are the pupils thereby benefited, by having their own invention and judgment stimulated, but the teacher has the best opportunity to estimate the extent of the pupils' experience and their perception of number relations.

In arithmetic, as in anything else, the more the pupil has seen and heard — the richer his sense experiences — the more freely can he move about in the subject.

The first problem given below illustrates what is meant by "practical"; the second, taken from a late work, is a fair sample of the arithmetical conundrum that has no legitimate place in a text-book.

(1) "Divide $240 between John and Sara so that the two shares will be in the ratio of their ages, which are 8 and 12 years."

(2) "A lady bought two pieces of cloth; the longer lacked 9 yds. of being three times the length of the shorter. She paid $2 a yard for the longer, and $3 a yard for the shorter, and the shorter piece cost as much as the longer. How many yards were there in each piece?"

The sort of thing illustrated in (2) is more flagrantly perpetrated in percentage, perhaps, than anywhere else. Here are two more problems, in advance work, that even more plainly typify the right and the wrong kind.

(1) "A merchant marks his goods so that he may allow a discount of 4%, and still make a profit of 15%. What must be the selling price of an article costing $4.80?"

(2) "A banker owns 2½% stocks, at 10% below par, and 3% stocks, at 15% below par. The income from

the former is 66⅔% more than from the latter, and the investment in the latter is $11,400 less than in the former; required the whole investment and income."

The conditions of such a problem could not possibly arise in actual business experience, and to waste time upon it is as unprofitable as to waste time, in grammar, upon the analysis and parsing of a sentence that would never be used in good colloquial or literary English.

Too many "money" problems. — Most text-books are open to criticism, not only for setting impractical, not to say impossible problems, but also for setting "money" problems almost exclusively, in percentage, and too frequently under other topics. It is bad enough to give the pupils an idea that almost the only application of the principles of percentage is to matters of money; it is worse to lend the weight of a school study to exaggerate still further the already over-emphasized idea that money-getting and money-handling are the important things of life. The thoughtful teacher will neutralize somewhat the tendency of the books, by setting many problems based on everyday matters, on the simpler facts of physics, and even on animal and plant physiology. The following examples are illustrative: —

(1) "A farmer's ice house holds 15 tons of ice. How often will he have to cut ice from a pond with a clear surface of 30 × 40 ft., in order to fill the house, if he cuts only when the ice is 4 in. thick?" (The pupils should find, by actual trial, the weight of a cu. ft. of ice.)

(2) "If the burning of 16 lbs. of coal keeps the average temperature of the schoolroom at 65°, for two hours, how much coal will have to be burned to keep the room

at that temperature for the school day?" (The conditions of the problem should be determined by the pupils by actual tests.)

(3) "How often will all the blood of an average adult pass through the heart in an hour? How many foot-pounds of work does the heart do in that time?" (The data for such a problem are obtainable from any good physiology. "Foot-pound" will be found defined in any good dictionary or cyclopedia).

Formal solutions. — As said earlier in the chapter, all written work should be neat and clear, and blackboard work, especially, should be self-explanatory. To secure this ideal, the pupils should be drilled, when regular text-book work is taken up, in the use of a correct, logical form of solution.

The chief requirements of such a form are: (1) that it shall state clearly the conditions given and the results required; (2) that it shall show the analysis of the problem; and (3) that the operations shall be *indicated* and the result of each step *named*.

Below are given some illustrations of the use of such a form in written work. It will be seen that the solutions illustrate also the excellent arithmetical principle of reasoning from "the given many to 1, and from 1 to the required many."

P. 67, Ex. 6.
ETTA JAMES.

Given: $1295, the cost of 37 horses.
Required: the cost of 48 horses, bought at the same rate.
(1) 37 horses cost $1295, by the terms of the problem.
(2) 1 horse cost $\frac{\$1295}{37} = \$35$.
(3) 48 horses cost $\$35 \times 48 = \$1680$. *Ans.*

P. 199, Ex. 9.

HENRY BROWN.

Given: \$351, amount sent to broker to be invested in sugar; 8 %, rate of commission.

Required: the amount paid for the sugar.

(1) 100 % = amount paid for sugar.

(2) 108 % = \$351, amount paid for sugar, and the commission.

(3) $1\,\% = \frac{\$351}{108} = \$3.25.$

(4) 100% = \$3.25 × 100 = \$325. *Ans.*

ADVANCED ARITHMETIC

The best arrangement of the course in arithmetic would leave out what is called the "higher arithmetic" altogether, as a separate text. One well-planned book, or at most two, will be found sufficient to give the pupils, whether in rural or in city schools, all they need of arithmetic, and, in addition, a beginning in algebra. The term "advanced arithmetic," then, should be taken to mean a thorough drill in the more abstract principles of the subject, and abundant illustrative work with miscellaneous problems. About five months are time enough to use in this higher review and practice work, and the pupil should, at the same time, be learning something of algebra and geometry.

CHAPTER XVIII

LANGUAGE TRAINING

Expression the supreme test. — The ultimate and supreme test of the teacher's work is the power which his pupils have *to express;* expression is the last and highest operation of the mind. Thought and feeling are expressed in language, painting, sculpture, music, and in all material products of man's skill; character is expressed in *conduct;* all the inner life is expressed in some form of outward *doing.*

With language lesson exercises a training in *oral* and *written* expression of thought and feeling begins, which should extend and increase in effectiveness throughout the school life. Drill in fluent, correct, and refined use of English should begin for each pupil the day he first enters school, and should be the last thing done for him as he leaves the university. The home should do very much before the school has opportunity to do anything; the work of formal education should be so well done that the results shall be observable through all the life of the pupil. The truest, most delicate test of intellectual culture is ability to use the vernacular with cogency, fluency, and precision.

PRIMARY STAGE

In beginning the work of language training, the teacher will do well to keep certain clearly established facts in his near view: (1) there can be no *expression* unless there is something — impression, thought, feeling — to be expressed; (2) expression, when there is something to be expressed, is a natural movement of the mind, and does not need stimulus so much as direction; (3) expression intensifies and clarifies impression. It causes, even in young pupils, an inner searching, a turning of the light of consciousness into mental corners, to find ideas, words, and forms of utterance.

The first aims. — The first aims, then, should be to quicken ideas already acquired, to develop new ones, and to give verbal form to both. To accomplish these aims requires the most sympathetic and close mental contact of teacher and pupil, and this is brought about best in the *conversation.* Just in proportion as the teacher's heart is in his work will he find free, unconstrained talks with his little people pleasurable and helpful to them, and not less so to himself.

Objects in view. — He should have several objects in view in these talks, but they should at no time become so obvious as to interfere with the freedom and naturalness of the intercourse. (1) The first object should be to find out what the children know best, what they think about most, what stirs their feeling quickest — in short, as the modern phrase has it, "the contents of their minds." He needs to know these things in order to know where to start from in his work of language training.

(2) The second object should be to get the pupils to *talk fluently* and naturally; fluency should be sought before correctness.

(3) The third object should be to secure — a little time — *correctness* of speech in words, tone, enunc and pronunciation.

Topics of conversation. — The topics of these talks with the pupils should be varied. Most frequently, perhaps, an information lesson, or a nature-study exercise, should form the nucleus around which the conversation should gather. Often a story, biographical or mythological, will furnish abundant material for a talk, and occasionally the pupils themselves should be permitted to suggest the topic. Free use should be made also of the reading lesson and the discussion of it, as a language exercise. One of the best means of calling out interested and ready talk is a picture, illustrating objects, scenes, or activities with which children are more or less familiar. It is easy to make a collection of such pictures from papers, illustrated price-lists, and the advertising pages of magazines.

Correction of error. — If it is remembered that talking is, with the child, an *art*, something in which skill is to be acquired by practice based upon imitation of good models, then no attempt will be made to furnish first, second, or even third year pupils with rules for correct speech. The best way to correct error is for the teacher to use good language himself — syntactically correct, choice and simple in wording, and distinct in enunciation. Unless such a model is kept constantly before the children, rules and regulations will do little or nothing toward forming, or reforming, their speech.

But there should be specific correction of errors; and doubtless the best way, at first, is quietly to substitute the correct word or pronunciation just when the child uses the wrong one. If the pupil says, "I taken the apple," the teacher says, "You mean 'I *took* the apple.'" Such correction should be made so that it will have effect, but not so as to embarrass the child, or make him feel that he is put to talking merely to afford the teacher a chance to criticise his speech.

ORAL COMPOSITION

Reproduction. — As facility and confidence are acquired, reproduction exercises may be introduced, from which the transition will be easy, later, to original oral composition. Some day, when the teacher has held the interest of the little listeners by some good story which he has read or — better — told to them, he may say, on finishing, "Now who will tell the story back to me?" and whoever undertakes to do so should be permitted to proceed without interruption. If there is time others may be allowed to supply omissions in his reproduction after he has finished. Even at this early stage, pupils may be asked frequently to "tell the story" of the reading lesson. If the teacher is so fortunate as to have time and opportunity to teach reading to beginners, without text-books, in the way suggested in Chapter VIII., then, of course, the whole reading exercise is a language drill.

Original composition. — The next step is into original narration. The first exercise may be based on a picture; after the pupils have told what they see, and what they think is going on in the picture, some one may be asked "to tell a story about it." If the story does not move off very well, the narrator should be helped by a little suggestive questioning.

Personal narration. — When some facility has been gained by the pupils in putting a "picture story" gether, the teacher may, some day, without pre notice, ask members of the class to tell what did on Thanksgiving, or on Christmas, or when went to the picnic, or to grandma's. Care should be taken to select, for these exercises, experiences which the pupils have recently had, and in which they have been much interested.

Skillful direction will be necessary to get the young narrators to give the experiences of a day in *chronological* order, and without undue embellishment from the imagination. If the teacher succeeds in this, and in correcting the more glaring errors of speech and tone, he may feel that he has done enough.

During all this time, from the first conversation exercise, there is no need for the pupils to know — indeed, it is better for them not to know — that they are undergoing a specific training in composition; the conversations should be kept up throughout, and the interest of the pupils should all the time be sustained.

WRITTEN COMPOSITION

Written composition may be begun as soon as the pupils acquire sufficient freedom in the mechanics of writing to be able to write without giving more attention to the forming of the letters than to the thought to be expressed, and when there has been gained considerable readiness of oral expression. The work they do in learning to read and write concurrently, according to approved methods, is a training in written composition; and there should be a good deal of practice even in the first months of school in copying sentences. All this is valuable preparatory work, in which only correct forms should be set before the pupils, and they should learn by imitation the elementary *mechanics* of composition.

Transition from oral to written. — The transition from oral to written composition may be made simply and naturally by saying to some pupil who has reproduced a story or told one of his own well, "Now, that's good, so good I want to keep it; how can I get it to keep?" This at once suggests the idea of writing the story, which is done, and a beginning is made in written composition. Or, if the teacher prefers, he may ask the whole class "to write the story" after he has read or told them an unusually short and interesting one.

These first efforts at written composition must be carefully collected and preserved by the teacher, for several reasons: (1) to make the pupils feel that what they have written is deemed of importance; (2) to enable the teacher to see what deficiencies the pupils have; (3) to enable a comparison to be made later with the pupils' more advanced work, and thus to encourage them by showing the progress they have made.

Frequency of written exercises. — Written composition should, after it is begun, go on concurrently with oral composition, there being, at first, much more of the latter. Only the "best stories" should be put in writing, and thus the pupils will come to look upon "writing, a story" (they should not be startled by being asked to "write a composition") as a special privilege. It can be so managed that the pupils will not dread "composition day," but will desire to have the written work oftener. In the first three or four years of school no attempt need be made to have written work done at any set, regular periods; let it come when, in the teacher's judgment, the occasion is most favorable for free, interested expression. Although it must be the rule for the teacher to take up all written composition exercises, for reasons given above, yet he need not mark and return every exercise. It is best, however, for him to make oral criticisms, comments, and suggestions on all exercises, whether marked and returned or not.

Correction of errors. — At first, the marking of errors should be confined to spelling, the use of capitals, and the use of the period; the oral criticism may include also the more flagrant errors in syntax. Not a word should be said about grammar or rules; correct models should be given and the imitation of them insisted on.

Before the pupils begin written composition as such, they will have learned something of the use of capitals and punctuation marks from their readers, and constant reference may well be made to the printed page as a sort of standard of right practice in written work.

Range of written composition. — If it be kept steadily in mind that the use of language is an *art*, it will readily be seen that skill in this, as in other arts, comes only from much practice; hence the need of making every class a language class. By this it is meant not only that oral recitations are to be made with due regard to the language forms of answers, but also that, as soon as the pupil can write freely, he should occasionally write a composition upon some topic in each branch of study pursued. Such compositions need be neither long nor formal, but correctness of form and expression must be insisted on. These written exercises should fit into and be a part of the regular work in the several branches, not being looked upon as compositions, but rather simply as drills in the written expression of the pupils' knowledge of geography, or history, or arithmetic. The teacher can easily manage to have, occasionally, a few minutes left in a recitation period, and can say, "Now, we have ten minutes before time to dismiss the class. Take your pencils and write me what we learned yesterday about nouns" (or about Columbus, or subtraction, etc.). If the teacher will examine these exercises, he will find much of the greatest value, whereby he may get an insight into his pupils' ways of thinking, their peculiarities of memory, their hold upon various subjects, as well as their defects of language.

By such exercises the pupils may early be brought to see that skill in oral and written expression is a valuable tool, useful in any subject, and they will be disabused of the too prevalent idea that such work should be confined to the "composition class." The rural teacher will also find the plan just outlined a means of circumventing the pupils who persist in avoiding, upon one available pretext or another, enrollment in the composition class.

Answering in complete sentences. — It remains to be said in this connection that although correct use of language should be one of the important ends aimed at in conducting any recitation, still there seems to be no reasonableness in the rule sometimes enforced, that *all answers should be in complete sentences.* Complete expression of thought does not always require a complete sentence. To insist that a child shall say, "I have four pencils in my right hand," in reply to the teacher's question, "How many pencils have you in your right hand?" is not only unnecessary, it is foolishly tiresome.

INTERMEDIATE STAGE

Language training during the first three or four years of the child's school life must be slow, persistent, patient — a forming of habits of correct speech without learner's knowing why they are correct, and a beginning in the formal work of written composition.

BEGINNINGS OF GRAMMAR

In the fourth or fifth year of school life some definite, clearly planned work may very profitably be begun in grammar. Indeed, it would be well to continue the work in grammar in connection with practice in written composition, rather than with the use of a grammar text-book, up to the time of entering the high school. As the result of this oral grammar teaching the pupil should, by the time he is ready for the text-book, be able to recognize easily the more important parts of speech in their ordinary connections, and should know enough of sentence structure to separate familiar sentences into their chief elements. All this can be learned from the reading lessons, and fixed by application in daily speech and in written work. Time will thus be saved, and may be used in the acquirement of skill in the *art* of language, this properly preceding the study of the formal science of grammar.

Teaching correct names. — It is highly desirable that from the beginning of the oral grammar teaching *correct names* shall be taught, and not such terms as "name-words," "quality-words," "action-words," and others even more misleading. It may be stated again that, as a rule, if a pupil is able to undertake the study of a subject he is able to learn the terms technical to that subject, and they should not be diluted for him.

An illustration of serviceable method in oral grammar is afforded by the following outline of a lesson plan:—

LESSON PLAN FOR TEACHING NOUNS

I. Time of the lesson — the regular reading period.

II. Preparation by the pupil — none.

III. Objects of the lesson.

  (1) To teach what a noun is.
  (2) To teach the term "noun."
  (3) To teach the use of capitals in proper names.

IV. Steps in realizing these objects.

  (1) Some day quietly ask the pupils of the reading class to lay aside their books. Point to some object and ask its *name*. Do thus with several objects, writing the names on the board as they are given, beginning each with a *small* letter.
  (2) Ask the class, "What have I here on the board?" Elicit some such answer as, "A list of names."
  (3) Ask the pupils to mention some more names. If any *proper* names are given, write them with a capital.
  (4) Tell the pupils, simply and quietly, that all these names may also be called *nouns*. Ask them to point out what difference they see in the way the nouns are written.
  (5) Erase the list, and ask each pupil to come to the board and write a noun. See to it, without giving any "rule," that proper nouns are written with capitals.
  (6) If enough time remains, have the pupils open their readers and point out some nouns in the lesson.

At intervals of about a week the descriptive adjective, the verb, the pronoun, and the adverb may be taught in the same manner as the noun. Each part of speech learned should be often reviewed by having it pointed out in the reading lesson, and, occasionally, in other lessons, as arithmetic or geography.

Sentence structure. — Later lessons, upon the same general plan, will develop the idea of the sentence, of subject and predicate, and of phrase and clause. The teaching will be *inductive*, definitions and rules will have no place in it, and the illustrations will be drawn mainly from the reading lessons and from the pupils' own compositions.

Teaching the sentence may be done according to the plan next shown: —

LESSON PLAN FOR TEACHING THE SENTENCE

I. Time of the lesson — the regular reading period.

II. Preparation by the pupils — none.

III. Objects of the lesson: —
  (1) To show what a sentence is.
  (2) To show some different kinds of sentences.

IV. Steps in realizing these objects.
  (1) Write "cats" on the board, and ask two or three pupils, separately, to tell what cats do. Write these sentences on the board as they are given.
  (2) Next write some nonsense jumble of words, as "Hickery dickery cats in dockery sold," and ask the difference between it and what was written before. (The answers will be that what was written first "makes sense," or "means something," or "says something you can understand.")
  (3) Erase the nonsense, saying, "Yes, that stuff doesn't mean anything; these (pointing to the sentences) mean something, and we call them *sentences*."
  (4) Erase the sentences, and say, "Make a sentence about dogs; one about hens; ask me a question about cows." Write these on the board and call attention to the interrogation point.
  (5) Tell the pupils, one at a time, to open their readers and read a sentence. Ask them to pick out some with the interrogation point at the end. Ask them whether these sentences *tell* something or *ask* something.

In reviewing this exercise, from the reading lessons, the terms "declarative," and "interrogative," may be taught incidentally.

While the pupils are learning grammar in this practical and simple way, the work in composition has also been going forward steadily.

WRITTEN COMPOSITION

The mechanics of composition. — The results sought in the primary work are to be sought also in the intermediate stage, but should be attained more in detail. The specific ends to be reached may be summed up in the phrase "automatic correctness in the mechanics of composition." By the time the pupil is ready to enter the high school he must be able readily to set down on paper somewhat of his knowledge, or thought, or feeling, in such form as shall show the right placing of the subject, proper margin, correct *spelling*, right use of capitals, proper punctuation, and *paragraphing* done with due regard to both sense and neatness. So much the high school may rightly demand of a pupil entering upon its course. Such readiness cannot be attained except as the result of constant, intelligent, and *interested* practice, and the practice should be in every subject in which the pupil has thought to express.

How to attain these ends. — This idea is emphasized in the report of the Committee of Ten, which says: "There can be no more appropriate moment for a brief lesson in expression than the moment when the pupil has something which he is trying to express. If this principle is not regarded, a recitation in history or in botany, for example, may easily undo all that a set exercise in English has accomplished. In order that bo teacher and pupil may attach due importance to this incidental instruction in English, the pupil's standing in any subject should depend on his use of clear and correct English." The last sentence is especially applicable in advanced work. Professor Hart was wholly right when he said: "Failure in English should disqualify any one from graduation from any institution. We have no right to certify to the world as an educated person one who is unable to express himself clearly and correctly in his mother tongue."

With the exception of paragraphing, all the things just spoken of are matters, plainly, of mere mechanical imitation. But to paragraph correctly involves the logical faculty, requiring a pretty clear mental outline or analysis of the subject into its sub-topics, and the arrangement of these in their proper order. A study of the paragraph should be begun early; its use should be learned directly from the printed page, the pupil learning inductively what its value is and how it is made.

In the primary work, the object is fluency of speech, with correctness rather incidental. In the intermediate stage, the object, as far as written work is concerned, is *ease* of *correct* expression, the correctness being the result of *conscious effort* on the part of the pupil. The habit of correct mechanical writing, like many other desirable habits, has to be formed by effort more or less conscious.

Letter writing. — One of the best means of teaching formal written composition is letter writing; correct form may be rigidly insisted upon, and at the same time the matter of the letter may be almost conversationally informal. Managed by a sympathetic teacher the letter writing exercise becomes a favorite one with the pupils, and a source of much valuable information to the teacher. If he so contrives as to allay the self-consciousness of the pupils — or, preferably, to prevent its becoming aroused at all — he is sure of as intimate a revelation of the pupils' thoughts and feelings as is made in the friendly, informal, face-to-face talks in the primary grades.

Letter themes. — One of the advantages of the letter-writing exercises is that topics may be found in every branch of study upon which to write interesting letters. Even in so unlikely a study as arithmetic there are opportunities for helpful practice in the writing of business letters, wherein goods are ordered, with inclosure of drafts or checks, consignments are made, directions are given to agents, and reports are made to employers.

In geography, history, nature-study, and reading, there is a wealth of material for letter writing. The pupils will take delight in writing descriptive and narrative letters from Honolulu, Suez, Barcelona, Hammerfest; and in writing as though they were with the Cabots, or Hudson, or Boone.

Letters such as are suggested here may be the means of correlating with the several branches mentioned another — drawing — whose value is of the highest, but which too often is not shown to have any practical connection with any other work of the school.

Illustrative drawing. — Of course the drawing taught below the high school is all free-hand, and the models used to draw from are *natural objects*. Great zest may be given to the drawing exercises if the pupils are encouraged to *apply* what they learn there in illustrating their letters, and, later, their essays.

may be seen at once that there is here a very wide field for the play of originality and for the useful outflow of the child's natural tendency to express himself in drawings — a tendency that spends itself too much upon fences, doors, flagstones, and other such places. This, like every other natural tendency of the child, should be directed and trained in the schoolroom.

There may be initial letter drawings, page illustrations, and tailpieces, the teacher taking occasion to show the pupils examples of all these in magazines and books.

Such illustrations of written composition should be suggested, not required; it will often be found advisable to grant its use as a special privilege.

The drawings will, most of them, doubtless be rather crude, but they will be wonderfully suggestive to the teacher, very helpful in intensifying and clarifying the pupils' impressions and thoughts, and will be a source of great pleasure to them.

The pleasure afforded by these exercises will be increased if the teacher writes a letter occasionally to the whole class, being careful to mention with sympathetic interest some point in the letter of each pupil. The letters the pupils write not only give excellent practice in written composition, but they serve admirably as *fixatives* of valuable matters learned in every branch. All errors of form, spelling, punctuation, syntax, and paragraphing should be marked and the letters returned to the pupils. The graver errors should be commented upon by the teacher before the class.

Essay writing.— The next movement toward attaining ease of correct written expression is in the writing of set essays upon definitely assigned themes. The purpose still is to drill the pupils into mechanical —

which now includes syntactical — accuracy; that is to say, not much if any attention should be paid yet, unless in an incidental way, to rhetorical finish or smoothness of composition.

Themes. — Guided by the fundamental ideas that there must be sense impression and thought before there can be expression, and that all these are dependent upon *interest*, the teacher will do well to exercise great care in the selection and assignment of themes. The only general rule worth giving is — assign at first *sensory* subjects, and assign them, for the most part, in harmony with the individual tendencies of the pupils; later, assign themes, occasionally, from history, biography, and literature, and sometimes assign them so as to correct or balance certain tendencies.

Sensory themes. — The sensory themes will be such as the pupils can find interesting material upon by their own immediate observation. If there are mills or factories near, the pupils may visit them; or the class may go together to see a bit of landscape, or some scene of historic note. After visiting a brickyard, they will write well on "The History of a Brick;" after seeing a sawmill, they can say much on "From Acorn to Board;" and "My last Picnic," "A Visit to Grandma's," or "A Walk in the Woods," will be found fruitful subjects, when they are *real.* Often a pupil with a tendency to natural history, or one who has a poetic or dreamy bent should be given a plain practical subject, like "Brickmaking," or "How a Well is dug." On the other hand, one who is all for the unadorned, practical side of things should occasionally write on the more poetic themes. The intermediate school is not the place to specialize.

Narration. — It is well to remember that, although such themes primarily demand observation, the composition should not be wholly — in many instances not mainly — *descriptive*. It requires much practice and skill to do descriptive writing even moderately well; the beginner naturally writes in the narrative form.

Marking papers. — The definite critical marking of the written work should begin in the intermediate grades. The teacher may at first mark out the errors and write the corrections above. This can be made very helpful to the beginner, and should be done with some thoroughness, albeit it is tedious drudgery for the teacher. The corrections should only rarely go into the rhetorical structure of the composition; rhetorical criticism belongs in the high school, and above.

After a while the teacher may save himself a good deal of work and serve the interests of the pupils better at the same time, by merely indicating the kinds of errors, and having the pupils work out the corrections themselves. This plan is given in detail on page 306. The schedule shown there may be easily modified and adapted to the requirements of the intermediate work.

Rewriting. — It is questionable whether it is ever worth while to require a composition to be rewritten in full, unless as an occasional rebuke to gross carelessness. The irksomeness of the task more than offsets any advantage accruing. But sentences or paragraphs that are unusually faulty may have the worst errors marked and be indicated for recopying.

Offhand writing. — Better than rewriting is practice in offhand writing. The teacher may read a story, or have some pupil do so, or may give a brief biographical sketch, or show a picture, and have the pupils immediately reproduce the story or biography, or write a story about the picture. Letters may be written, in class, from given places, or about certain events. The teacher may write upon the board "grass," or "water," or "sand," and say, "Take your tablets and write a page on this." Or the words, "boy," "dog," "cow," "rabbit," may be written on the board, and the class requested to write two pages about them, making a good "story." These are simply suggestions of many ways in which the pupils can be drilled in quick, correct written expression under conditions that make it certain the composition is their own. This method may be carried into any branch which furnishes material for written composition. It is advisable for the teacher to take up these written exercises in every instance, although they need not be marked and returned each time.

ORAL COMPOSITION

Mechanics of oral composition. — While the training in written composition is going forward along these lines, attention to *oral* composition is not to be relaxed. Practice in the art of using good English must not be limited to writing it. Pupils should be so drilled in the mechanics of speech that they will come at last to correct *automatic* pronunciation, enunciation, and syntax. As the case stands now the critical ear has much to endure on the street, in public conveyances, from the platform and pulpit, in friendly conversation — in short, wherever English speech is heard. By no means the least vexing thing about the English heard in the places is the tone in which it is uttered. Schools o grades should, of set purpose, do what they ca secure culture of the ear and of the voice, that the one may detect and the other correct lack of euphony in speech.

Errors of speech are commoner than errors of writing, and are due to ignorance and carelessness — and, in this matter, ignorance is due largely to carelessness. No one with normal vocal organs and knowledge enough to use a dictionary has any excuse to offer for mispronunciation or slurred enunciation, and there is almost none for faulty syntax.

Training in the recitation. — The standard of good speech must be set up in every recitation, and the teacher's estimate of the value of an answer should include correctness of pronunciation, clearness and fullness of enunciation, and, in the more advanced classes, the verbal structure of the answer. The answer to a question in history given correctly as regards the subject-matter of the history, but carelessly in verbal structure and utterance, should no more be accepted by the teacher as satisfactory than would a written composition on the same topic, which, though correct in historical statement, yet violated the rules of form and syntax.

Every oral recitation affords opportunities for drilling in the mechanics of speech; but a recitation by the topic method affords in addition opportunity for valuable practice in somewhat extended oral composition. The pupils should be encouraged to take pains with the putting together of what they say upon a topic, so that it may have attractiveness and force. Definite training in forensics should be a part of the teaching in English in every school, from the third reader grade up. A separate chapter (XIX.) will treat of this subject of forensic drill.

GETTING A VOCABULARY

To express clearly and adequately it is as necessary to have a good *vocabulary* as it is to have ideas and feelings that seek expression; there must be words enough wherewith to express as well as something to express. An integral part, therefore, of the carefully planned training in language art must be the building up of a vocabulary.

Technical terms. — Every study and every school exercise may be made to contribute something to this knowledge of words. It has been insisted upon all along that the terms technical to each subject be taught, and taught as technical terms, without being softened down into inadequate and sometimes silly synonyms. Weak and indistinct wording is sure to react into weak and indistinct thinking. Nothing so quickly cultivates care and accuracy in the use of words, and a true appreciation of their values, as the correct use of technical terms. So let dividend and divisor, plus and minus, adjective and verb, petiole and stamen, and all other such words, be taught when the pupil comprehends the *things* for which the words stand.

The reading lessons. — In the reading lesson there are often words that are new to some or all of the pupils; quite frequently a little inquiry will show that words that are not new are not well understood. All such words should be made into readily used *thought carriers;* and the way to do this is *not* by having reading book or dictionary definitions committed to memory. Words to be understood at all must be understood in their relations to one another in the expression of thought and feeling. The pupil should, then, learn to make his own definitions from the context, and frequent calls upon him to make good sentences in which recently acquired words or phrases are rightly used will test how well he has grasped meanings.

Word hunting. — All children will, if put in love with reading, read, at home or in public libraries, much that is a good deal more advanced than their reading exercises at school. The teacher should do everything he can to have the pupils form the habit of noting the *use* and *pronunciation* of each strange word met with in such general reading. This habit will do much to counteract the tendency to skip new words and to "gobble the story." There is as much pleasure and profit to be had from the hunting of words and from a carefully discriminative study of them as from the hunting and classifying of minerals, or shells, or other things of objective nature.

The specific memory drill generally known as committing "memory gems" — selections from good literature — is an excellent means of giving the pupil a stock of words and phrases that may do good service as the vehicles of his own thought. The teacher can always readily tell from the composition work which pupils are wide readers and which read but little.

What the high school may expect. — The next step of the learner of language art is into the work of the high school, and the high school has a clear right to demand, as a minimum, that all who begin its work shall be able (1) to make a *neat manuscript* in any kind of written work; (2) to punctuate, capitalize, spell, and paragraph with almost automatic correctness; (3) to build sentences that shall be syntactically correct; and (4) to express thought and feeling with somewhat of clearness and simplicity. Although it is true that a pupil of average capacity may be given this equipment with which to enter the high school, it is also true that many colleges do not demand so much from those seeking admission to the Freshman class, and, if they did, would hardly find the demand met.

CHAPTER XIX

LANGUAGE TRAINING (*continued*)

RHETORIC

ALL the work in language training below the high school is better done without any text-book on composition. The pupil may profitably begin the study of a text-book on rhetoric in the first year of the high school.

The scope of rhetoric. — Rhetoric is to the art of verbal expression what technical grammar is to sentence making. It defines terms, formally states and sums up what the pupil already knows in a practical way, and introduces him to a more extensive knowledge along the same lines. Like grammar, rhetoric should, as far as possible, be studied inductively; and definitions, principles, and rules should receive the most abundant illustration.

The practice of rhetoric should go right along with the theory of it; the pupils should write, and write much, from the first week they enter upon the study of the text-book. It was once the fashion, and the like is sometimes seen even now, to have the pupils master the theory of the text-book, while *writing* — the putting of the theory into actual practice — was incidental; the pupils wrote a few "essays" if there was time after they had finished the text-book.

Two plans for teaching rhetoric. — When the arrangement of other courses admits of it, the best plan for combining rhetorical practice with rhetorical theory is to make the use of the text almost wholly subordinate and incidental, using it occasionally in the preparation of regular lessons, but mainly for reference. The principal work of the pupil, according to this plan, would be careful written and oral composition, and the correlative study of literature. The themes for composition would be drawn from all available sources — history, biography, geography, civics, science, literature; and the compositions, oral or written, or both, might be delivered in the classes from which the themes were taken, or at the regular rhetoric period. But criticism, by pupils and teacher, upon the *rhetorical* value and finish of the work should be confined to the period devoted to rhetoric and literature.

Another plan. — Another plan, not so good as the one just outlined, but perhaps more generally usable, is to devote a shorter time to the study of rhetoric, and to put as much time and emphasis upon the study of the text as upon practice in composition.

Whichever plan is used, it must be remembered that the prime end in view is training in an *art;* and, further, that *oral* composition is as important as written.

CRITICISM OF WORK

Much has been said and written of late years upon the necessity of good training in language art, and the deplorable lack of it. One cause of the lack has not been emphasized as it should be, and that is that thorough training means constant, careful criticism, and criticism means *drudgery* for the teacher;

hence it has been evaded in one way or another — generally by not having the pupils do much composition work.

Methods of criticism. — In criticising composition, the teacher must keep two things in mind: (1) that the pupil should have the benefit of *favorable* criticism whenever it is deserved; and (2) the pupil should, as a rule, *correct* his errors himself, the teacher merely indicating what they are. Whenever the teacher finds, in a pupil's composition, any bit of real individuality in thought or phrasing, let him not withhold discriminating praise.

Indicating errors. — In the earlier work of the pupil the teacher may frequently write in corrections in expression; but in the high school he should only indicate errors and require the pupils to correct them. The advantages of this are to save work for the teacher and to make the pupils do work that is profitable to them. Any simple schedule of marks may be adopted to indicate errors. The following, which uses the cardinal numerals, has been found satisfactory in actual practice: **1**, spelling wrong; **2**, capitalization wrong; **3**, punctuation wrong; **4**, syntax wrong; **5**, poor wording or phrasing; **6**, feebleness; **7**, poor order of arrangement of matter; **8**, incompleteness; **9**, lack of neatness in preparation of manuscript. The teacher can abridge this schedule, or extend it to cover other points, as his work demands. This schedule may be used conveniently by simply underscoring the faulty word, sentence, or paragraph, and affixing the proper number. Of course, the criticism of oral composition will have to be oral, but it can be made to cover the same general points and, in addition, the posture and gestures of the speaker, his stage presence, and his pronunciation and enunciation.

Reporting corrections. — The teacher must satisfy himself that the errors he marks in written work are corrected by the pupils. To this end, the papers, bearing the teacher's marks, should be returned to the pupils one day, and corrections should be reported in class the next. The teacher cannot otherwise be sure that the pupils have gained, or can gain, any advantage from his marking of their papers. It has happened that even college students have failed to correct misspelled words because of inability to find the correct spellings in the dictionary. Grave errors of syntax or rhetoric should be corrected by rewriting the sentence or paragraph on the board.

Criticism by pupils. — Occasionally the pupils may be allowed to mark one another's written work. This criticism by the pupils is not of so much benefit to the one criticised as to the critic, but for the latter it is an excellent exercise. The teacher will find it worth while sometimes to take the essays that have been marked by the pupils, and to mark both the errors that have been overlooked by the critic, and the critic for overlooking them. This, however, means double work for the teacher.

Criticism by pupils of one another is also of value, under discreet direction by the teacher, in oral composition; it cultivates attention in the critics, and carefulness in the speaker.

In this grade, as in the lower, much writing and speaking should be done without being made the subject of criticism, except in a general, or a commendatory, way. Criticism can be very easily overdone; the consciousness of being subject constantly to criticism benumbs pupils, prevents their best work, and eventually diminishes or destroys interest. Expression should, as far as possible, be free and spontaneous; let the pupil write and speak often without feeling that he is to be criticised.

THE GROUND TO BE COVERED

A text-book in rhetoric should be selected with regard for the amount of emphasis it places upon the following topics: (1) the several kinds of oral and written composition; (2) selection of theme, and collection and arrangement of material; (3) word values; (4) the sentence and the paragraph; (5) figures of speech and qualities of style; (6) versification, or metrics.

Illustrations of these in literature. — Each of these points is not only to be studied in the text-book, but is to receive abundant illustration in the reading and the literature classes, and is to be practiced upon in the pupils' writing and speaking. No text-book can contain sufficient illustrative matter, and it is well enough to have it so, since what the average pupil finds outside his text-book seems, usually, of more value to him than what he finds in it. It will be seen at once, then, that opportunity to refer to good and varied literature is necessary to the adequate teaching or learning of rhetoric.

Illustrations in the pupils' work. — All the topics mentioned above as demanding special attention in the study of rhetoric must be illustrated not only from good literature, but by the practice work of the pupils. One of the greatest wastes of energy in the studying and teaching of rhetoric is the frequent practice of merely having the pupils "write essays" at stated intervals, without any particular regard to having them written in the definite departments of rhetoric. The term "essay" should be used in its true meaning to denote a particular kind of writing, a kind which, it is pleasant to note, is coming into favor again, even in the modern fiction-saturated literary atmosphere. Pupils under training in language art ought to write not only essays — using the word rightly — but fiction, biography, history, treatises, poetry, orations, and arguments.

Selection and statement of theme. — As a rule, the teacher himself should, until the pupils have advanced beyond the study of the text-book, select the themes for writing or speaking; and they should be selected in accordance with the suggestions made in the preceding chapter. As the pupils grow more practiced and mature, they can be allowed greater liberty to select their own themes, and in the last year of the high school they should be required, as a part of their training, to select and properly state the subjects. Much of the attractiveness and value of an essay, a lecture, or a story, can be exhibited in the title.

Collection and arrangement of material. — One of the things most essential to good composition is the skillful making of notes, the preservation of material that comes through observation or reading, or as the result of turning one's subject over in the mind. Another essential thing is the proper arrangement of all material in some clear sequence in the composition. Neither the selection nor the arrangement of material receives, often, more than very slight attention from the teacher. The pupil needs careful and specific training in both. This training ought to begin below the high school, and the pupil should be required, before writing on any subject, to submit an outline, or "brief," of his theme. These outlines should be discussed by teacher and pupils as a class exercise. Many an otherwise good lecture, sermon, or paper has been spoiled by lack of logical arrangement of subject-matter.

"Sight work" in composition. — For the same reasons that there is "sight reading" by the beginner, from chart or blackboard, and by the student of foreign languages, and sight work in arithmetic and geometry, there ought also to be much sight work in composition. It is an excellent plan for the teacher, occasionally, when the class is not expecting such an exercise, to put into a box as many subjects, written upon slips of paper, as there are pupils in the class, and let each draw one; each pupil is then immediately called on to speak five minutes, or to write a page, clearly, connectedly, correctly, upon the subject he drew. Such an exercise is greatly enjoyed by the pupils as an excellent drill in quick thinking and ready expression — much better, in some ways, than the set exercises in writing and speaking.

Word values and sentence building. — Two of the most interesting, as well as most valuable, lines of rhetorical study are the origins and values of words, and how they have been and may be built into sentences so as to produce strength, clearness, beauty, and the other elements of the best written and oral composition. At no other point in the course of rhetoric is a close study of the best models so necessary, and although thorough work in these topics will have to be left to later and more mature researches in literature, still much can be profitably done in the first or second year of the high school. While the pupils are working under this topic, their composition should be done with special reference to it, and what is learned should come out in all the pupils' practice thereafter.

Figures of speech and qualities of style. — It should be wholly unnecessary to say anything of the need of studying the rhetorical figures and the elements of style more thoroughly than by learning the definitions from a text-book; but it is an unfortunate fact that many classes in rhetoric are never given an opportunity to study these from original sources, and too few Freshmen know the difference between metonymy and hyperbole. All this is still more true of metrics. Certainly the boy or girl who "finishes rhetoric" in the high school ought to be able both to recognize the different kinds of English poetry and the different meters in which they are written, and to appreciate the adaptability and fitness of each mode of poetic expression to the thought and emotion to be expressed.

Rhetoric and literature. — Such teaching of rhetoric must be in connection with literature, but its study is, properly, only introductory to that of literature. It is not forgotten that in earlier pages of this book the position was taken that *all* the pupils' reading, from the very first, must be a reading of good literature, but there is much difference between an unconscious assimilation of literature and a conscious, analytic, sympathetic study of it. Such a study is meant when it is said that rhetoric is introductory to the study of literature.

LITERATURE

A literary "laboratory." — It is to be said at the very beginning of any discussion of this topic, that the only way to make effective what has been so frequently and justly said in late years about studying literature instead of studying about literature, is to teach it with the aid of a well-furnished literary laboratory — that is, a library filled with the best literature of the past and of to-day. To undertake to teach literature adequately without free access for the students to a well-stocked library is like undertaking to irrigate a garden without water.

Literature itself the main issue. — There is no good reason why the study of the biography of great writers and the study of the history of literature should not go along with the study and enjoyment of literature itself; but the literature must all the time be the main issue, and the biography and the history must be incidental and subordinate. It is much better that a student should know and feel "Hiawatha" than that he should know the life of Longfellow, sweet and simple and helpful as that life was; it is much better that he should be able really *to read* "The Merchant of Venice" than that he should know Shakspere as a writer of the Elizabethan Period. But as a matter of fact, if the student appreciates literature and feels its deep inspiration, he will not be content until he also has some knowledge of the lives of the men and women who have written and spoken for him — knows what sort of people they were, and in what times, with what contemporaries, and under what environment, they lived and worked. The text-book on literature should be used mainly for reference; the first aim is to cultivate a discriminating taste for good literature — a taste that shall go with the student through all his after years, and be to him a well-spring of enjoyment, and, many times, a means of salvation.

Wide reading. — To secure this end, the first requirement is that pupils shall do much reading, at first, perhaps, without more than the most general direction. Nothing would be lost and much could be gained by having students take a course of general reading arranged upon broad lines, for a half year after they are through with the text-book on rhetoric, and before they take up the regular study of literature. The reading should be done under the direction of the teacher, who should advise and suggest, but should make but little effort to have analytical study of what is read. Students and teacher might meet occasionally to talk over, in an informal way, what had been read.

Analytical study. — When the regular study of literature is begun it should be analytic and sympathetically critical. The analysis should for the most part be a search for and estimate of subjective and rhetorical values, but it should proceed sometimes so far as the syntax of the sentences. Sculptors are close students of anatomy, and observe its laws in their most artistic work; so, too, must the writer and speaker — word artists, both — be close students of syntax, and follow its laws. And as the critic of the sculptor's art must have a knowledge of anatomy in order to appreciate the beauty or strength preserved in marble and bronze, and to admire the art which shows some unusual but true tension or repose of muscle, so the student of literary art must go to the anatomy of the sentence in order to understand the power of the artist in his use of word or phrase.

The following methods of investigation have been used with pleasure and profit to teacher and students, and it is hoped that teachers of literature, whether in the country schools or in the colleges, may find something in what follows adaptable to their several needs.

Each student should be provided with the same book — not a *text-book about literature*, but a copy of Shakspere, or Hawthorne, or Kipling. These books should be supplied from the library, but in case there is no library, paper-bound copies of the world's standard authors may be had, at very small cost.

In the recitations the pupils should, ordinarily, have book in hand, and the discussion should be, as nearly as possible, a friendly, cordial talk by teacher and students, guided sympathetically by the teacher along such lines as are suggested in the "plans" next given.

GENERAL PLAN FOR THE STUDY OF LITERATURE

I. A reading through of the composition: —

  (1) To determine its purpose, — that is, whether it is to instruct, to amuse, to arouse, to persuade; and to what end the writer strives to do either of these.
  (2) To determine whether this purpose has been attained.
  (3) To mark certain passages for rereading and closer analysis.

II. A rereading: —

- (1) To discover the elements of strength, unity, harmony, or the causes of a lack of these.
- (2) To discover the elements of beauty, whether of thought or diction or both.
- (3) To discover the elements of other rhetorical effects and values (using for reference, in advanced classes, Kames's "Elements of Criticism," and Blair's "Rhetoric," both standard books).
- (4) To trace out fully mythologic, historical, or literary allusions.
- (5) To study new words, and note new meanings of familiar words.
- (6) To characterize the style of the writer.
- (7) To commit to memory a few choice quotations.

These points will serve also, with slight modification, in the criticism of an oration or lecture while it is being listened to.

How the foregoing general suggestions may be specifically applied is shown in this —

LESSON PLAN UPON "A TALE OF TWO CITIES."

I. As to the story as a whole.

After the book has been read by all in the class, the recitation may be directed by the following questions, for the full discussion of which several recitation periods will be needed: —

- (1) What was Dickens's leading purpose in writing this story? Was it attained? What minor purposes of the writer appear in the story?
- (2) Wherein does this book differ in purpose and in style from "Martin Chuzzlewit" (for example)? What is the essence of the story's plot?
- (3) What are the chief characters in the book, and are they clearly drawn? Are they true to life? Which character is most prominent, and why?

(4) Give a short synopsis of what you consider the three strongest scenes. Why did you select those three?

(5) What is the *ethical* value of the book?

(6) State briefly the characteristics of the period of history that is used as the setting of the story.

(7) Quote from memory one or two passages.

II. As to the rhetorical elements.

(1) How would you characterize the style of Dickens as shown in this story? What oddities or mannerisms of style did you note?

(2) Quote or read some passages illustrating the writer's power of characterization. Which of the characters of the book seem most clearly and strongly drawn?

(3) What rhetorical figures are most used? Give passages illustrating two or three different figures.

(4) Are there many or few allusions to mythology, history, and other literature? What are some of them?

(5) What new or unusual words did you note? Give their derivations and the meanings with which Dickens used them.

After the students have grown familiar with this or some similar scheme of analysis, the work may be varied by assigning a separate book, essay, or poem, to each pupil, and having each in turn discuss what was assigned him, applying to it all the points of the scheme in order. This reading of a whole piece of literature according to some plan for discovering its purpose, its beauties, — all of its characteristics, — followed by an attempt to interpret these to other interested students, is one of the surest means of putting the pupil into vital touch with literature and enabling him to draw from it both intellectual and ethical culture.

The less the exercises in the study of literature are like formal recitations the more enjoyable they will be, and the more profitable. A mere formal analysis of a composition is as destructive of its literary beauty and aroma as the picking to pieces of a flower is of its beauty and perfume.

Memory exercises. — A most valuable part of the work in literature is to commit permanently to memory much choice matter. Such memorizing not only strengthens a faculty whose proper development has been somewhat neglected, but also has results of the highest cultural and ethical value. The practice of committing selections should begin almost as soon as the child learns to read, and need never be discontinued.

A pleasant variation in these memory exercises is made by the teacher's giving a quotation, or having some pupil do so, and calling upon the class to " locate " it.

Collateral reading. — While the careful study of type compositions in literature is going on, there ought also to be a good deal of collateral reading required, little or none of which need be made a subject of regular class discussion. Everything should be done to arouse and cultivate an appetite for *good* literature *of all kinds.* Such an appetite is the best possible safeguard for all time against worthless and injurious printed matter.

Written composition. — Written composition will, of course, continue throughout the study of literature; and should gain much in excellence from the analysis of style and the study of words and sentence values. As an occasional exercise a written synopsis of some piece of literature may be required. Much attention should now be given, by both writer and critic, to t *literary quality* of the composition.

FORENSICS

Nothing can give a better training in the art of using words to express feeling and thought than the group of exercises included under the term "forensics," here used to designate not only argumentative discourse — to which it is limited by the dictionaries — but any kind of composition which is delivered *orally*. Carefully directed exercises in oral discourse are of the highest value, first, as training in *expression;* and, second, for their practical utility in all the affairs of life.

Value of forensics. — The psychological value of *expression* — the fact that it intensifies and clarifies *impression*, whether objective or subjective — cannot be overstated; and the drill in forensics is or should be very specifically a training in expression.

The advantages of skill in oral discourse are no less marked in the everyday concerns of life. Not only do the lawyer, the minister, the legislator, the diplomat, and the teacher (more than all others) need, as a ready tool with which to work, the ability to think and talk on their feet, but the merchant, the handworker, the plain, hard-headed man of affairs — all have many occasions wherein power to speak to their fellows with clearness and cogency would be of the greatest possible service.

Should be provided for in all schools. — The organization of every school, from the rural school to the university, should provide definitely for teaching forensics. In elementary schools, where the exercises consist chiefly of simple declamations, dialogues, and readings, the work is necessarily under the direction of the regular teacher of the other branches; there should be no departmental teaching in this, any more than in anything else, below the high school. But from the high school on, forensics should be under the care of a trained specialist, and should be a required branch, being no more left to the initiative of students, self-organized into "literary societies," than science or mathematics is.

Forensics in the lower grades. — Training in the power to speak easily and forcefully while standing before an audience should begin in the second grade. All the earlier exercises should have as their objects mainly the cultivation of memory, and training in the mechanics of oral delivery, no original work being attempted below the seventh or eighth grade, and but little in those.

Of course, in a very important sense, every class in which there are formal recitations is a parliamentary body, where each pupil receives some training in the art of putting his thoughts together and uttering them intelligibly to his fellow-pupils and teacher. In addition to this, in the two grades just below the high school, class discussions, or elementary *debates*, may very profitably be introduced. There are numerous questions in history, civics, and the reading lessons, which readily enlist the interest of the pupils upon different sides, and into the discussion of which they may be easily drawn without being conscious of the fact that they are actually *debating*. Later, questions for discussion in class should occasionally be regularly assigned by the teacher, and leaders should be appointed for both sides.

Debating. — Thus will be easily introduced *debating*, one of the very best possible means of training the mind in many desirable qualities — in sureness and quickness of memory, in clearness of logical judgment, in broad tolerance of opinions other than one's own, in alertness and soundness in defending a position, and in readiness and exactness of expression.

The very fact that a debate is a *contest* makes it far more stimulating and provocative of effort than either an essay or an oration. As a result, there will be more assiduity in the search for material, in the careful arrangement of it, in the marshaling of facts and the drawing of conclusions therefrom; attention will be paid to securing strength rather than mere rhetorical beauty; and almost necessarily there will be more sincerity and vigor in the delivery of an argument than in that of an essay or oration. A fatal weakness of much college oratory is its lack of sincerity, its attempt to attract by mere rhetorical phrasing rather than by sincerity of purpose. The same principles that guide in the selection and assignment of themes for written composition should govern also in the case of debating. "Resolved, that the pen is mightier than the sword" is no more a suitable question for discussion than "Beyond the Alps lies Italy" is a suitable theme for an essay. It is most gratifying to note that many colleges now give training in forensics, — and the intercollegiate debate is much to be preferred to the intercollegiate football game.

Parliamentary practice. — Along with the debating, and beginning almost as soon as it does, must go a training in parliamentary usage; in a representative form of government it is almost as necessary as specific instruction and training in citizenship. The incapacity of many educated people to preside over or take part properly in a meeting is astounding, not to say inexcusable. The man or woman ignorant of parliamentary practice is, no matter how well armed with a righteous cause, at the mercy of the parliamentary tactician. The many women's clubs throughout the country are paying more attention to this matter of parliamentary training than any other agency; but if the schools had done their full duty there would be no need of "coaching" people how to make or how to put motions.

In all these ways — and more that will suggest themselves to a teacher having the matter at heart — the training should begin that shall give to every pupil — to some more, to others less — keen appreciation of the strength and beauty of the English language, and skill in using it as an everyday tool, as an artist's brush, or as a weapon.

CHAPTER XX

CHARACTER BUILDING

Character the supreme end. — All true method in education has as its ultimate and highest aim the building of individual character — revealing to the individual all his capacities, and making him master and director of them. What does not result in this supreme end is not education, whatever text-books or apparatus may be used in acquiring it, however many years may be spent upon it.

Character of three kinds. — A discussion of character as the true objective point of education too often loses sight of the fact that as education is threefold, so is its result, character, threefold. Stated specifically, the aim of physical education is *physical character*, of intellectual education, *intellectual character*, and of the education of the moral feelings and the will, *moral character*.

The source of all character is *within the individual* himself; it can no more be put into him from the outside than new tissue can be put into the body from the outside. All real growth, physical or psychic, is the result of the reaction of *inner activity* upon some kind of nutrition or stimulus. The function of the teacher, in character building, is to modify or furnish environment, and stimulate this inner activity to react upon it.

The laws of character building. — The laws of character making are very simple, and are the same for all three phases. They are (1) the law of *self-activity*, and (2) the law of *habit*. Like all other fundamental laws, they are, though simple in themselves, varied and complex in their applications.

By the law of self-activity is meant that body and mind are both naturally active, — that muscle and nerve and psychic faculty are so constituted as to function by reason of their own inherent life and energy, and to function *pleasurably*. Biologically and psychologically, the price of life is activity — *use*. When any organ or faculty ceases to function, it degenerates and atrophy begins. There would be but little activity if it were not pleasurable; hence the *pleasurableness* of activity is essential to the health and normal growth of body and mind. While this is true, the converse is not necessarily true. All normal activity is pleasurable, but, under the artificial conditions of civilized life, *not all pleasurable activity is normal* and healthful. To perceive and apply this distinction in directing the pupils' activities requires the most careful discrimination and management upon the part of the teacher. The natural tendency of steam is to expand, and it is this that makes it serviceable; but, to make the tendency useful, the vapor must be made to exercise its force in certain directions. The nature of powder is to explode; but to make the explosion beneficial it must occur under properly arranged conditions. So with the activity of the child; every muscle and every mental faculty tingles with the tendency to function, but on account of the child's ignorance the functioning needs guidance — not repression. The teacher would find "discipline" much easier, and the need of it very infrequent, if he would conform to this principle and would devise means of *directing* rather than of *restraining* pupils' natural activities.

Spontaneity. — A very essential feature of this natural activity is its spontaneity, and the more the teacher can preserve this spontaneity, keeping the child — at first, at least — as free as possible from a consciousness of being restrained or directed, the better the results obtained. Here is found a reason why formal calisthenics so often become distasteful to children. In Germany the play of school children is more or less under formal direction, and the results are not so good as in England, where school sports are spontaneous. The same thing finds illustration in the psychic realm; any teacher can testify that five minutes of the *spontaneous*, interested activity of a pupil's mind is worth an hour of forced attention.

The law of habit. — By the law of habit is meant that movements, feelings, thoughts, tend, by repetition, to become permanently established. A muscle contracting a certain way, tends to contract in the same way again, and a third time the tendency is stronger still; finally, the impulse striving constantly to move along a path of least resistance, a muscle habit is formed. Emotions, modes of thought, acts of will, become, in like fashion, matters of habit. *And character of any kind is activity become habitual.*

The work of the teacher, then, in character training, is rightly to direct and employ the *natural activities* of the pupil until their right functioning becomes *habitual.* And here, again, it must be remembered that activity best becomes habitual when it is spontaneous; so, even if at first there must be some coercion from without, no permanent character can be formed except by enlisting the active, coöperating, and *lasting* interest of the pupil, thus making his activity spontaneous. There is no real government except *self*-government; the individual must have *possession of himself* — his muscles, his intellectual powers, his feelings, his impulses of whatever sort. In so far as any voluntary organ of the body, any faculty of the intellect, or any tendency to action is not under the ready control of the will, just so far is the character — in the broad sense — defective. The constant aim of ethical training is to give the pupil *self*-propulsion and *self*-control.

PHYSICAL CHARACTER

Many teachers feel no responsibility for the physical character of their pupils, and in this they only reflect the indifference of communities and boards of trustees. When people consider the matter at all, they still think that the concern of the teacher is with the imparting of information in the school subjects, and with "making the pupils behave," and this is about all that the public demands of teachers, whether in the one room country school or in the university.

When it comes universally to be not only accepted as an educational theory, that the aim of education must be character, — completeness of righteous living by the individual, — but felt as an educational necessity, then the public will demand of teachers that pupils shall come forth from the schools sounder in *body* than when they went in, as well as intellectually and morally stronger. The time is past for supposing, or permitting, the scholar's brow to be "sicklied o'er with the pale cast of thought."

Physical habits.—If the principles here enunciated are true, freedom must be given to the physical organs to function normally, and all spontaneous activities that contribute to this freedom are to be encouraged. Simple habits that any teacher can do much to help his pupils form, and that aid greatly in establishing physical character, are the habits of erect carriage in sitting, standing, and walking, the habit of cleanliness, hygienic habits of eating and drinking, and habits of proper dressing. Time taken in showing pupils the value of these and in training in them is time excellently spent. If any teacher should say at this point, "Here is mere common-place," the answer must be, "Granted; but look over your roomful of pupils and see whether the habits themselves are *common*." The teacher must remember that it is as much his business to train a pupil out of a slumping posture or a shuffling gait as to train him out of forgetfulness or indistinct utterance.

If a child is in normal health and has opportunity for natural play out of doors, the muscles will attend to their own development, by reason of their inherent tendency to function. School boards, then, everywhere must somehow be brought to recognize the necessity of providing *playgrounds* sufficient to meet the requirements of growing children for outdoor exercise; and teachers must give as free a rein as possible to the *spontaneous* play of the children. It may occasionally become necessary to direct their activities into sports that are safer or that give more varied employment to the muscles than the games to which pupils sometimes give themselves too constantly and too arduously. In such cases the new games proposed by the teacher must be made more attractive than those that are to be abandoned.

In the country as well as in the city, the outdoor play should be supplemented by specific training in calisthenics and marching, both of which can be made delightful to the pupils and serviceable in cultivating a most desirable *esprit de corps.*

Gymnasium training.—When boards of education know and *feel* their duty fully, no high school, college, or university will be without its gymnasium, equipped with proper apparatus, and in charge of a competent director whose business is the development of physical character. The exercises required may easily be made sufficiently interesting to afford all the advantage gained from spontaneous sport; and the gymnasium work need not interfere with purely voluntary athletics outside of it.

MENTAL CHARACTER

The term "mental" is to be understood as including intellectual and moral, and these two phases of character are so blended and so interdependent that they cannot be satisfactorily discussed separately. All good intellectual habits contribute much to the strengthening of the ethical character,—as, for example, carefulness of observation, quickness of thought, accuracy,—and moral habits rise out of conditions or acts of the intellect; there must be thought before there can be definite ethical motive or action.

Evasion of responsibility.—One count in the indictment brought against the modern public school is, that the teacher is too prone to feel that he ha
concern with his pupils except to sharpen th

that it is not particularly an affair of his if they turn out quick-witted rascals. On the other hand, there seems to be a tendency in modern society to turn over all the training of children to the schools, and their control to curfew ordinances.

In this evasion of responsibility lies a very grave danger, not only to the individual, but to the community. The school should, of right, be expected to strengthen and extend the work of the home in character making. But if this all-important matter is neglected in the home, then more than ever is it true that the integrity of the republic is in the keeping of the schools.

There is needed first a revival of the plain and homely virtues which are fundamental to sound character.

The homely virtues fundamental. — It was expected of the old-time teacher that he would pay quite as much attention to these as to the "branches of learning." It ought still to be true that the public should consider no school justified of its existence out of which the pupils do not come well grounded in habits of *courtesy*, *obedience*, and *honesty*. Each of these words is here used in a somewhat more extended sense than attaches to it ordinarily.

Courtesy. — True *courtesy* rests upon the Golden Rule, and so reaches farther than to the mere external conventions of life, which, though they greatly diminish the friction of our contact with one another, are yet not essentials. It reaches far enough to mean unselfish helpfulness, respect for real character under whatever garb, and reverence for things usually esteemed as sacred. In sharp contrast with this real courtesy of the heart are too often seen in children and in adults a selfish disregard for the material comfort and the feelings of others, and a smart flippancy toward superiors in place or age, and toward the sacred things of life.

Obedience. — *Obedience* to authority is absolutely necessary for the good of both the individual and the community. The thing which, perhaps more than any other, gives foreign critics ground for questioning the permanent strength of our institutions, is an apparently increasing disregard, in this country, of law and legally constituted authority. It is easy to find the sources of this weakness in the relaxed discipline of the home and the school.

But a return to the external, coercive measures in vogue a half century ago is not here advocated. Let both parent and teacher remember that real obedience comes from within; that children have a right to be shown the value of obedience; and that they will yield it much more cheerfully and effectively if their innate sense of right is satisfied. Excellent opportunity for showing the need of obedience is afforded in even the elementary work in *civics* — opportunity which the teacher should fully improve.

The disobedient child will grow into the disobedient man or woman, and of such is the lower world of unhappy brawlers and criminals.

Honesty. — To be honest is something more than to refrain from taking or withholding other people's property, — something more, even, than to have no desire to take what is not one's own. To be honest is to have a deep and abiding sense of the necessity of meeting fully all one's obligations of whatever kind. We say of a boy or man who has this sort of honesty that he is *reliable*, *trustworthy*, — that he has integrity, — and it is restful and satisfying to have dealings with such a one.

The teacher turns with relief from the shifty, self-excusing pupil to the honest one; everybody rests confidently upon the promises of the honest man.

Perfect, lucid honesty is even a rarer virtue than truthfulness; a man may be truthful as far as his knowledge goes and still fall somewhat short of being *honest*. Honesty really includes truthfulness; there cannot be perfect honesty without truthfulness of word and act.

The boy or girl who goes out of the school innately courteous, promptly obedient, and unreservedly honest, is well panoplied for any struggle.

But while it is true that these come first in importance among the things that may justly be demanded of the schools, there are other habits of mind that are needed in order to wrest a full measure of success from the conditions of life.

Intellectual habits. — In the sharp competition of the modern struggle for something more than mere existence, constant need is found for a sound intellectual character made manifest in the trained power to observe, to attend, — that is, to *concentrate effort*, — to gain general concepts and draw correct conclusions, and to express, in some manner, with readiness and accuracy.

These characteristics mark, in greater or less degree, the man and woman of innate strength of mind, whether they have had schooling or not; and many minds lack them, even after a long schooling — pewter cannot be brought to a cutting edge. But every school should be so organized as to afford to all who have capacity to do so, full opportunity to develop intellectual character, strong, lasting, and useful.

At the risk of tedious repetition, it must be said again that no character is enduring unless it has grown up within the individual, and is bone of his bone. Character forced upon him from the outside will always remain outside like a garment, and will sooner or later slough off. The daily papers publish numerous instances of this.

For the teacher the question is: How can I, day by day, without the use of more coercion than is absolutely necessary to steady the pupil in his right purposes, induce the activity of all motives that tend to righteousness of mind and heart?

Feeling, will, and character. — The question is primarily one of *motives* — of *interest* in one form or another, since all motives are generically named by the term "interest." Although knowledge is necessary to awaken feeling, to arouse interest, it is by no means enough to insure action. The vigorous appetites of the healthy body are its motives; without them it would lose health and life. The *knowledge* that food, sleep, and exercise are essential to physical health is not by any means enough to insure our taking them properly; there must be a real *hunger* for them that will not be denied. So a child may know — and any child of six does know — what is right, and yet not do the right, for lack of strong feeling. Mere knowledge is not protective or effective even in the case of the adult; knowledge must sink down deep into the feelings, must become *kinetic as motive.* Laurie forcefully says: "The virtuous life is not a life of contemplation, but of action. . . . We do not wish to rear citizens who talk about the virtuous life, and walk about displaying moral placards, but citizens who quietly do their duty as a matter of course, and are ever watchful over themselves in all the details of business and of social and family intercourse."

But too often motive is allowed, through some defect of will, to evaporate without becoming effective. The teacher should be careful not to arouse feeling without so managing that some of it shall spend itself in action. To this end will must be developed, and will is like muscle — it gains strength from *use*.

Character the result of assimilation. — Character, as an inner growth, is the result of *assimilation*. Physical character is the result of nutrition, the healthy assimilation of food; and whatever contributes to nutrition — rest, sleep, exercise, cleanliness, complete breathing — helps to make the character of the body.

The value of ideals. — Mental character — sound intellect and sound morals — is just as much the result of the healthy activity of the mind's assimilative powers. Judgment, imagination, feeling, will, all work together to produce character. In this case *assimilation* has a double significance. The mind not only appropriates to its own growth such sense acquisitions and concepts as will afford it nutriment, converting them, so to say, into its own fiber and substance, but it comes also to *shape itself* after the model of ideals of its own creation — to *assimilate* itself to them. In the truest sense we make ourselves after our own images, conforming ourselves to our own ideals, and it is of the utmost importance that right ideals shall be formed.

THE SOURCES OF IDEALS

The sources from which the active mind of youth draws its ideals are abundant and varied. Material environment, the companionship of fellows, the conduct of adults, the thousand things that make up "home influence," the ordinary daily employments, and whatever reading matter is accessible, all these are seized upon, and out of the elements they furnish ideals are formed.

Æsthetic environment. — One of the tardiest steps to be taken in educational progress is the one which has resulted from the recognition of the influence of *material* environment upon manners and morals. Now from every quarter — from the country school with its few cheap pictures on the wall, as well as from the city with its new high school building adorned with facsimiles of the choicest specimens of Greek art — comes testimony to the direct and powerful influence which æsthetic environment exerts upon character. Under such influence lessons are better and more readily learned, discipline is easier, and life is more abundant for both pupils and teachers. Surely, some day the people and school boards that represent them will be convinced that no money can be ill spent that makes schoolhouses and school-grounds models of comfort and beauty.

The social factor. — The teacher too easily forgets, in the midst of his work with books and the "branches of learning," that the child is a part of the social organism, and that the social factor in character building cannot safely be neglected. His life takes form and color from his associates of whatever age; innate imitativeness leads him to do, with dangerous unconsciousness, what he sees those around him doing. So some idle word uttered by an elder, the conversation of a companion of his own age, a street scene, the conduct, or even the dress, of the teacher, may, any one or all of them, profoundly modify the ideal which, through all the formative years, is slowly evolving.

The control of these things, outside of his own personal influence, is but little in the hands of the teacher. Responsibility rests upon him, however, to hold up, in one form or another, a high ideal of society and of the relations of the boy and girl thereto. For this, opportunities are abundant in the teaching of history and civics.

The teacher's personality. — No element in a child's school experience counts for so much in the unconscious or conscious making of ideals as the personality and directive power of the teacher, if the child is affected by these at all. It is a peculiar fact that some pupils do not seem to be touched for good or ill by the teacher's personal influence, while others grow either to hate everything for which, in their minds, the teacher stands, or to model their own characters so closely upon the teacher's as even to imitate his walk and mannerisms of speech. As a rule, however, the teacher's character, whether good or bad, creeps into the ideals of his pupils in direct proportion to the pedagogical soundness of his teaching. The best thing a teacher can do for his pupils is to *give them himself* freely. I am speaking now not only of the teacher of children, but of the college professor also. The best any teacher has, or is, is none too good for the pupils — belongs by inherent right to the pupils, by virtue of their being such. He is unworthy and unfit, who would *teach*, but is not willing to spend his clearest thought, his richest feeling, his ripest experiences, upon his pupils. All the reading, all the travel, all the social opportunity, all the good and true, that enter into the teacher's life, should be distilled into his teaching. But even so much may be done, and the teacher may yet fall short of his highest duty and highest privilege. These things are his best acquisitions — they are not himself — and they may be shared with the pupils without much expenditure of the real self. A teacher may give freely of these things, and yet be utterly selfish, serving his own ends and satisfying his own pride. To make the gift worth most, there must go with it love and sympathy. There must be the vital and quickening warmth of desire to have young minds grow and character form. The stress of endeavor must be on doing good to the pupils, not on winning popularity or reputation for the teacher. If the current flows constantly outward it will always be fresh and freshening; if it is made to return selfward it will soon grow stagnant.

There are men and women in classrooms and in charge of schools, who grudge the giving of even a little knowledge outside the text-book. They have knowledge, fresh and abundant; they have experience, rich and illustrative; they have books which they enjoy themselves, — but they seem to think these things should be kept as the Egyptian priests kept their best religion, for the initiated, the inner circle only. To share with their pupils the helpful book, the richer experience, the deeper knowledge, they seem to think would vulgarize learning.

But it must not be forgotten that if the teacher is to spend himself for his pupils fully and unreservedly, he *must be worth spending.* He must have that to give that shall justify the giving, — must have some kind of real riches. He who teaches should have abundant knowledge, sifted experience, fresh and honest feeling, and a *tested character.* Of these he may give and give, and he will have more for himself at each giving. The public must demand that its schools shall be put in charge of men and women who have both *knowledge* and *culture*, and have these interfused with *character* that is clean and fine — which may not be defined, but will be helpfully felt.

The influence of books. — Next to the shaping force of personality, in parents, associates, and teacher, the most direct influence is exerted by what is read. The printed page is a silent, constant, powerful factor in the creation of the ideals after which our lives are modeled or by which they are wrecked. Surely the teacher, in giving to a child the power to interpret the symbols of the types, assumes a tremendous responsibility — a responsibility which can be met in no other way than by putting into the hands of pupils, from the very first, only the *best* of reading matter.

Nothing must stand in the way — no supposed necessity for teaching "practical" arithmetic, or the facts of geography and history, or the subject-matter of any other branch, must be permitted to take precedence of the necessity of forming the *taste* for good reading and the habit of studying the *characters* delineated in biography, history, and literature.

Piece by piece, with a little from this life story, with something from that poem, with a glowing line from some masterpiece of writing, the ideal is formed, and the thought and life of the individual assimilated to it.

Children's reading. — Children, long before they can read, are as fond of stories as they are of sweetmeats, and one strong incentive to their progress in reading is that they may read stories for themselves. So valuable an instrument of teaching is the story now recognized to be, that special training in the *art* of *story-making* and story-telling is given in German normal schools, and in some in this country. If it is worth while to give an answer to the few who question the propriety and safety of the story, it is sufficient to mention the Parables, the finest examples of the teaching story to be found in any literature.

Although it is true that children read mainly just for the "story" — a matter in which they are closely imitated by many of a larger growth — still the busy mind is all the time unconsciously testing the persons and events of the story by an innate sense of fitness and fairness. While the boy or girl is looking at pictures, before the printed page can be interpreted, the question is often asked: Which are the good people, and which are the bad ones? The fairy story, pure and simple, is not so well liked — not so absorbingly read, and referred to, and reread — as the narrative containing "real folks" and real human interests.

The essentials of a good story. — This, then, is the main point, and any story placed in the hands of children should be built up about a core of healthy human interest. It should have ethical value, or, at least, should contain nothing distinctly unethical or suggestive of evil — nothing by which wrong is made attractive; but, also, it is best not to have the moral too prominent or over-emphasized. The healthy-minded adult does not particularly relish the "novel with a purpose," in which the "*haec fabula docet*" is obtrusive; and the healthy-minded child is much like his elders in this respect.

The point here is that, ordinarily, stories constitute a very large, if not the larger, share of the girls' and boys' general reading, and that stories intended for them should be full of the sound human element and attractive ethical suggestiveness. They should be based on biography, history, adventure, and the common experiences of the home and school life; and whatever form they take, or on whatever thing they are based, they should furnish material for the standards of moral judgment and moral conduct.

Different books for boys and girls.— Those who have had occasion to examine children's literature must have been impressed by the fact that there are, relatively, many more stories, in books and magazines, for *boys* than for *girls.* It is not necessary here to discuss the causes of this condition of things, but that it has a very practical bearing upon the subject in hand was shown by the results of an investigation made some time ago upon children's ideals. In answer to questions submitted to boys and girls alike, a large percentage of girls named some man or manly deed as the ideal of what they wanted to be or do.

No one can doubt that it is better that for girls the womanly ideal should be held up, as for boys the manly one should be; and there is pressing need of literature, suited to children, that shall give to woman's work and womanly grace and dignity the charm and attractiveness that rightly belong to them.

Other reading than "stories." — But in guiding the pupils' reading, as it certainly is the business of the teacher to do, it must be seen to that much other matter than stories of even the best sorts is read and assimilated. A great deal can be introduced as "side reading" in the regular geography, history, and nature-study classes. Such reading, which is as useful in the college as in the grammar school, widens the horizon of the student enormously, and sets many things in right perspective for him. His interests are quickened and broadened,—and the mind full of right interests has no room for wrong ones. Every healthy point of contact the teacher can help to make between a pupil's interests and his material or social environment diminishes the probability of the pupil's making morbid and unsafe contact for himself.

The moral value of school subjects.—All the reading which the pupils do becomes much more effective if it is the result, direct or indirect, of interest taken in the work done in the several branches of study. And the studies themselves have in them that which can nourish the moral ideal and strengthen the moral nature. This is especially true of what are called the "culture studies" —geography, history, civics, reading; but it is true also of the thought studies,—arithmetic and formal grammar,—and it is true in a higher degree than in these of nature-study and science work of all kinds. The skill of a teacher reaches its highest level in the ability to have the pupils draw the spiritual essence out of all facts and things, and therewith to quicken their true ethical life.

History.—For example, no teaching of history really deserves the name that does not show the upward trend of humanity, that does not show the great men and women of history to have been instruments for working out the beneficent purpose of a higher power, lifting the race nearer its ultimate goal. In addition to this, every teacher of the history of our own country should rejoice in the opportunity to teach the great lessons of democracy—and it may be so done that the very beginners will catch something of its true spirit.

Nature-study. — So great is the value of nature-study in cultivating genuine religious feeling (and the ethical feelings need the religious to give them substance and strength), that it deserves frequent mention. No study of material things has any right to be called "nature-study" unless it is so directed as to cause to grow quietly and permanently into the consciousness of the pupil the concept of a beauty-loving, beauty-creating, and beneficent Author of laws by which all things are bound into a fundamental unity.

Literature. — From literature, both by the close study of it in school and college and by the general reading to which such study should lead, are to be drawn some of the richest and most abundant materials to go into the formation of ideals of life and conduct.

Æsthetic feeling is almost as closely and as helpfully associated with the ethical as is the religious; and since all good literature is a transcript either of the beautiful in nature and art, or of the strong and true in humanity, it must therefore furnish much that counts in the cultivation of the æsthetic and the humane.

Function of imagination. — Literature has a most marked effect in the development of the imagination. It is this quality which makes the bad book so dangerous — even more dangerous than the evil companion. The imagination is the most active faculty in the making of ideals, and if the elements entering into its combinations are such as to make the image of the western "tough" most pleasing to the boy reader, or of the empty-headed society woman to the girl, then the boy and girl set straightway about conforming themselves to these ideals.

On the other hand, imagination, given the best elements with which to work, can and does construct attractive images of character and conduct that draw the boy and girl into righteous willing and doing. Parents and teachers cannot be too keenly observant of the reading matter that pupils come into possession of. Even a public library needs child-guarding care in its management.

Character-value of expression. — In character building, as in all other forms of growth, whether physical or psychic, there must be acquisition, assimilation of what is acquired, and *expression* of results. Expression not only is the sole test and evidence of the extent and kind of acquisition and assimilation, but it also intensifies and makes completer these two operations.

But the power of expression goes even further than this; if forms of expression are assumed and persisted in they react upon body and mind so as eventually to set up within them corresponding states or activities which did not at first exist. This is illustrated, with keen psychologic insight, in one of Mr. Grant Allen's stories, in which a man for a time successfully feigns a particular species of insanity, and ends by being really insane. Recent researches by Dr. Petrie upon the life of the ancient Egyptians have convinced him that their *conscience* was developed from external acts — that their *character* grew out of their *conduct*. But we hardly need go back to ancient Egypt to find illustrations; every modern community is full of people whose conduct is largely the result of imitation and conservative adherence to established usage, and whose conscience is mainly the product of habitual conduct.

Reformative effects of expression. — Not only does expression thus react so as to *form* character; its infl ence is indispensable in *reforming* character. To quote from an earlier work:[1] "It is on the reaction of expression upon character that keepers of reformatories and prisons largely rely to work improvement in their charges. If men are compelled to keep clean, to walk upright, to forego intoxicants, to eat plain food, and to do *honest work*, the characters of all but the most abandoned will respond to the changed forms of outward behavior."

Manumental training. — Upon such a basis as these facts afford, best rests the argument for manual training — better named manumental training. The testimony from every school where it has gained a trial is to the effect that it is not only of value because it removes, through the manual dexterity it gives, a handicap with which pupils had before been forced to enter the straining race of life, but it is of far higher value in its effect upon the *character* of the pupils; they are gainers from it in body, intellect, and morals.

Through such training, the inherent activity of the young — the demand of every tissue and every faculty *to be used* — finds healthy and happy outlets. The reaction upon character is almost immediately perceptible; the conscious possession of skill, of acquired precision of movement, of *usefully productive and constructive ability*, shows in the carriage, in increased intellectual aptitude, and in correcter manners and conduct.

All this has been said by friends of manual training — some of whom were its enemies till they tested it — and said so often and so strenuously that it would seem that every community should prefer to spend less on reformatories (all of which provide *manual training!*) and more in furnishing such training as a preventive of the increase of the ignorant and incompetent criminal class.

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[1] Roark's "Psychology in Education," p. 231.

Professor J. L. Tadd says: "We should develop a disposition disposed to energetic action or work, in response to stimulating thought — a disposition that hungers and thirsts for right action according to environment. Too often mere head-learning creates a wish or desire for good without there being sufficient impulse in the organism to prompt the energetic action required to achieve it."

Other forms of expression. — Any correct form of expression — or outflow of activity — has value in its reflex upon character. Sentiments and opinions to which young people give utterance in debate, in an essay, in a declamation, or even in a recitation, may or may not be felt and held strongly at the time they are uttered; but the act of uttering them, especially if it be in *debate*, at once presses them more or less deeply into the character. For this reason the teacher needs to exercise care in the selection and assignment of themes for forensic exercises. It is easily among the possibilities that a young man may have his character permanently warped as the result of his advocacy of a doubtful proposition, or the earnest delivery of sentiment and thought with which he, at heart, disagrees.

But whatever the means employed to accomplish this one dominant purpose of *making character*, through them all must flow the strong and vivifying current of the teacher's sympathetic influence. The teacher must constantly furnish to the pupil much, and direct him to more, whence he may gain concepts of truth, beauty, law, unit to be assimilated into his ideal, to which ideal he, turn, shall assimilate himself. Thus individual mora may be made sure. But it cannot be called sufficient until the individual projects his personal character into his civic life. The whole community or state must be bound by the ten commandments, even as the individual is.

Ere the teacher can call his work complete he must have so wrought that his pupils shall act upon their environment with skill and aptitude, making a safer, better, happier world for those who are to come after them — making the environment more easily conformable to the high ideals of those who shall take the torch from their drooping hands.

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